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SHARP 20U-FS1 SERVICE MANUAL

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SHARP

SERVICE MANUAL

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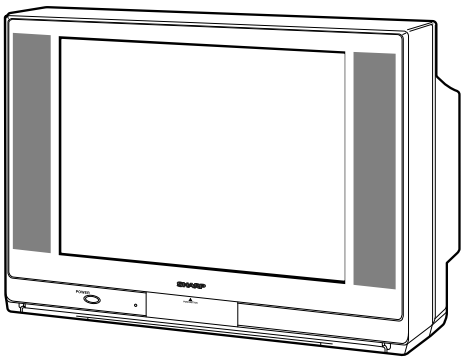

COLOR TELEVISION

Chassis No. GA-2

MODELS **20U-FS1**
CU20FS1

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

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ELECTRICAL SPECIFICATIONS

POWER INPUT ..... AC 120 V, 60 Hz
POWER RATING 90W
PICTURE SIZE ..... 1,239 cm^2 (192sq inch)
CONVERGENCE ..... Magnetic
SWEEP DEFLECTION ..... Magnetic
FOCUS ..... Hi-Bi-Potential Electrostatic
INTERMEDIATE FREQUENCIES
  Picture IF Carrier Frequency ..... 45.75 MHz
  Sound IF Carrier Frequency ..... 41.25 MHz
  Color Sub-Carrier Frequency ..... 42.17 MHz (Nominal)
AUDIO POWER
  OUTPUT RATING ..... 2.5 W(RMS) x 2pcs
SPEAKER
  SIZE ..... 6 x 12 cm, 2pcs
  VOICE COIL IMPEDANCE ..... 16 ohm at 400 Hz
ANTENNA INPUT IMPEDANCE
  VHF/UHF ..... 75 ohm Unbalanced
TUNING RANGES
  VHF-Channels ..... 2 thru 13
  UHF-Channels ..... 14 thru 69
  CATV Channels ..... 1 thru 125
  (EIA, Channel Plan U.S.A.)

Specifications are subject to change without prior notice.

SHARP CORPORATION

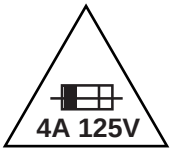
This document has been published to be used for after sales service only.
The contents are subject to change without notice.

IMPORTANT SERVICE SAFETY PRECAUTION

■ Service work should be performed only by qualified service technicians who are thoroughly familiar with all safety checks and the servicing guidelines which follow:

WARNING

1. For continued safety, no modification of any circuit should be attempted.
2. Disconnect AC power before servicing.
3. Semiconductor heat sinks are potential shock hazards when the chassis is operating.
4. The chassis in this receiver has two ground systems which are separated by insulating material. The non-isolated (hot) ground system is for the B+ voltage regulator circuit and the horizontal output circuit. The isolated ground system is for the low B+ DC voltages and the secondary circuit of the high voltage transformer.
   To prevent electrical shock use an isolation transformer between the line cord and power receptacle, when servicing this chassis.



CAUTION: FOR CONTINUED PROTECTION AGAINST A RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 4A-125V FUSE.

SERVICING OF HIGH VOLTAGE SYSTEM AND PICTURE TUBE

When servicing the high voltage system, remove the static charge by connecting a 10k ohm resistor in series with an insulated wire (such as a test probe) between the picture tube ground and the anode lead. (AC line cord should be disconnected from AC outlet.)

1. Picture tube in this receiver employs integral implosion protection.
2. Replace with tube of the same type number for continued safety.
3. Do not lift picture tube by the neck.
4. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage anode completely.

X-RADIATION AND HIGH VOLTAGE LIMITS

1. Be sure all service personnel are aware of the procedures and instructions covering X-radiation. The only potential source of X-ray in current solid state TV receivers is the picture tube. However, the picture tube does not emit measurable X-Ray radiation, if the high voltage is as specified in the "High Voltage Check" instructions.
   It is only when high voltage is excessive that X-radiation is capable of penetrating the shell of the picture tube including the lead in the glass material. The important precaution is to keep the high voltage below the maximum level specified.
2. It is essential that servicemen have available at all times an accurate high voltage meter.
   The calibration of this meter should be checked periodically.
3. High voltage should always be kept at the rated value –no higher. Operation at higher voltages may cause a failure of the picture tube or high voltage circuitry and;also, under certain conditions, may produce radiation in exceeding of desirable levels.
4. When the high voltage regulator is operating properly there is no possibility of an X-radiation problem. Every time a color chassis is serviced, the brightness should be tested while monitoring the high voltage with a meter to be certain that the high voltage does not exceed the specified value and that it is regulating correctly.
5. Do not use a picture tube other than that specified or make unrecommended circuit modifications to the high voltage circuitry.
6. When trouble shooting and taking test measurements on a receiver with excessive high voltage, avoid being unnecessarily close to the receiver.
   Do not operate the receiver longer than is necessary to locate the cause of excessive voltage.

IMPORTANT SERVICE SAFETY PRECAUTION

(Continued)

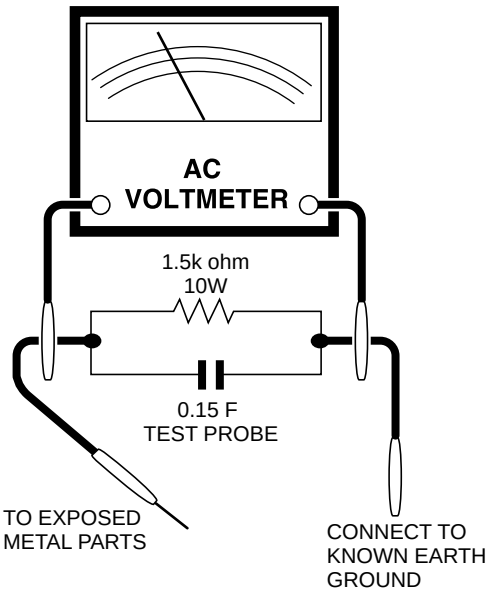
BEFORE RETURNING THE RECEIVER

(Fire & Shock Hazard)

Before returning the receiver to the user, perform the following safety checks.

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Inspect all protective devices such as non-metallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators, etc.
3. To be sure that no shock hazard exists, check for leakage current in the following manner.

- Plug the AC cord directly into a 120 volt AC outlet, (Do not use an isolation transformer for this test).
- Using two clip leads, connect a 1.5k ohm, 10 watt resistor paralleled by a 0.15µF capacitor in series with all exposed metal cabinet parts and a known earth ground, such as electrical conduit or electrical ground connected to earth ground.
- Use an AC voltmeter having with 5000 ohm per volt, or higher, sensitivity to measure the AC voltage drop across the resistor.
- Connect the resistor connection to all exposed metal parts having a return to the chassis (antenna, metal cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor.
  AII checks must be repeated with the AC line cord plug connection reversed. (If necessary, a non-polarized adapter plug must be used only for the purpose of completing these check.)
  Any current measured must not exceed 0.5 milliamp. Any measurements not within the limits outlined above indicate of a potential shock hazard and corrective action must be taken before returning the instrument to the customer.



SAFETY NOTICE

Many electrical and mechanical parts in television receivers have special safety-related characteristics. These characteristics are often not evident from visual inspection, nor can protection afforded by them be necessarily increased by using replacement components rated for higher voltage, wattage, etc.
Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features are identified by "⚠" and shaded areas in the Replacement Parts Lists and Schematic Diagrams.

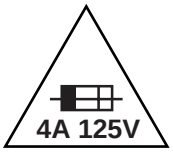
For continued protection, replacement parts must be identical to those used in the original circuit. The use of substitute replacement parts which do not have the same safety characteristics as the factory recommended replacement parts shown in this service manual, may create shock, fire, X-radiation or other hazards.

PRECAUTIONS A PRENDRE LORS DE LA REPARATION

■ Ne peut effectuer la réparation qu' un technicien spécialisé qui s'est parfaitement accoutumé à toute vérification de sécurité et aux conseils suivants.

AVERTISSEMENT

1. N'entreprendre aucune modification de tout circuit. C'est dangereux.
2. Débrancher le récepteur avant toute réparation.
3. Les déversoirs thermiques à semi-conducteurs peuvent présenter un danger de choc électrique lorsque le réceqteur est en marche.
4. Le châssis de ce récepteur a deux systèmes de mise à la terre qui sont séparés par un matériau isolant. Le système de mise à la terre non-isolée (chaud) est pour le circuit du régulateur de tension B+ et le circuit de sortie horizontale. Le système de mise à la terre isolé est pour les basses tensions C. C. B+ et le circuit secondaire du transformateur de haute tension.



PRECAUTION:POUR LA PROTECTION CONTINUE CONTRE LES RISQUES D'INCENDIE, REMPLACER LE FUSIBLE PAR UN FUSIBLE DE MEME TYPE 4A-125V.

REPARATION DU SYSTEME A HAUTE TENSION ET DU TUBE-IMAGE

Lors de la réparation de ce systéme, supprimer la charge statique en branchant une résistance de 10 k en série a vec un fil isolé (comme une sonde d'essai) entre la mise à la terre du tube-image et le fil d'anodel. (Le corden d'alimentation doit être retiré de la prise murale.)

1. Il est à noter que le tube-image de ce récepteur est intégralement protégé contre l'implosion.
2. Par mesure de sécurité, changer le tube-image pour un tube du même numéro de type.
3. Ne pas lever le tube-image par son col.
4. Ne manipuler le tube-image qu'en porant des lunettes incassables et qu'après avoir déchargé totalement la haute tension.

LIMITES DES RADIATIONS X ET DE LA HAUTE TENSION

1. Tout le personnel réparateur doit être instruit des instructions et procédés relatifs aux radiations X.
   Le tube-image, seule source de rayons X dons les téléviseurs transistorisés, n'émet pourtant pas de rayons mesurables si la haute tension est maintenue à un niveau préconisé dans la section "Vérification de la haute tension".
   C'est seulement quand la haute tension est excessive que les rayons X peuvent entrer dans l'enveloppe du tube-image y compris le conducteur de verre. Il est important de maintenir la haute tension en-dessous du niveau spécifié.
2. Il est essentiel que le réparateur ait sous la main un voltmètre à haute tension qui doit être périodiquement étalonné.
3. La haute tension doit toujours être maintenue à la valeur de régime-et pas plus haute. L'opération à des tensions plus élevées peut entraîner une panne du tube-image ou du circuit à haute tension et, dans certaines conditions, peut entraîner une radiation dépassant les niveaux préscrits.
4. Quand le régulateur à haute tension fonctionne correctement, il n'y a aucun problème de radiation X. Chaque fois qu'un châssis couleurs est réparé, la luminosité doit être examinée bout en contrôlant la haute tension à l'aide d'un voltmètre pour s'assurer que la haute tension ne dépasse pas la valeur spécifiée et qu'elle soit correctement réglée.
5. Ne pas utiliser un tube-image autre que celui spécifié et ne pas effectuer de modifications déconseillées du circuit à haute tension.
6. Lors de la recherche des pannes et des mesures d'essai sur un récepteur qui présente une haute tension excessive, éviter de s'approcher inutilement du récepteur.
   Ne pas faire fonctionner le récepteur plus longtemps que nécessaire pour localiser la cause de la tension excessive.

PRECAUTIONS A PRENDRE LORS DE LA REPARATION

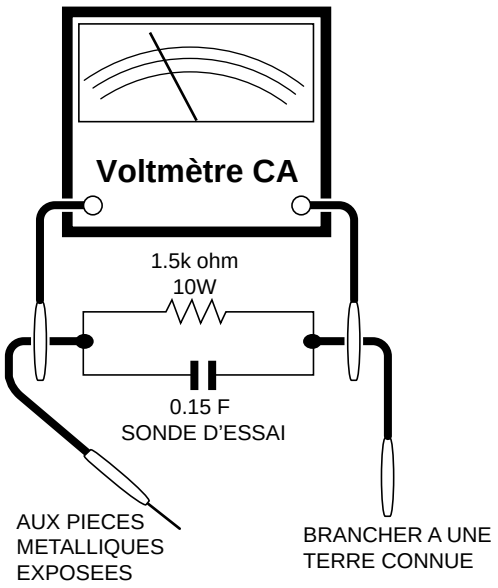
(Suite)

VERIFICATIONS CONTRE L'INCEN-DIE ET LE CHOC ELECTRIQUE

Avant de rendre le récepteur à l'utilisateur, effectuer les vérifications suivantes.

1. Inspecter tous les faisceaux de câbles pour s'assurer que les fils ne soient pas pincés ou qu'un outil ne soit pas placé entre le châssis et les autres pièces métalliques du récepteur.
2. Inspecter tous les dispositifs de protection comme les boutons de commande non-métalliques, les isolants, le dos du coffret, les couvercles ou blindages de réglage et de compartiment, les réseaux de résistance-capacité, les isolateurs mécaniques, etc.
3. S'assurer qu'il n'y ait pas de danger d'électrocution en vérifiant la fuite de courant, de la facon suivante:

- Brancher le cordon d'alimentation directem-ent à une prise de courant de 120V. (Ne pas utiliser de transformateur d'isolation pour cet essai).
- A l'aide de deux fils à pinces, brancher une résistance de 1,5 k 10 w atts en parallèle avec un condensateur de 0,15µF en série avec toutes les pièces métalliques exposées du coffret et une terre connue comme une conduite électrique ou une prise de terre branchée à la terre.
- Utiliser un voltmètre CA d'une sensibilité d'au moins 5000 /V pour mesurer la chute de tension en tr avers de la résistance.
- Toucher avec la sonde d'essai les pièces métalliques exposées qui présentent une voie de retour au châssis (antenne, coffret métallique, tête des vis, arbres de commande et des boutons, écusson, etc.) et mesurer la chute de tension CA en-travers de la résistance.
  Toutes les vérifications doivent être refaites après avoir inversé la fiche du cordon d'alimentation. (Si nécessaire, une prise d'adpatation non polarisée peut être utilisée dans le but de terminer ces vérifications.)
  Tous les courants mesurés ne doivent pas dépasser 0,5 mA.
  Dans le cas contraire, il y a une possibilité de choc électrique qui doit être supprimée avant de rendre le récepteur au client.

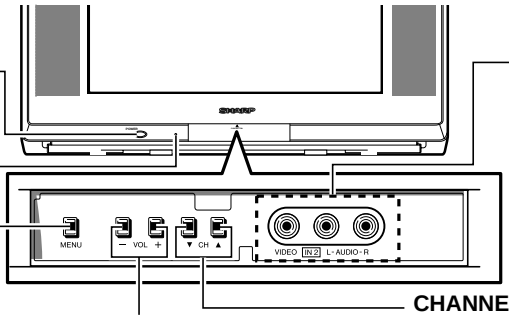


AVIS POUR LA SECURITE

De nombreuses pièces, électriques et mécaniques, dans les téléviseurs présentent des caractéristiques spéciales relatives à la sécurité, qui ne sont souvent pas évidentes à vue. Le degré de protection ne peut pas être nécessairement augmentée en utilisant des pièces de remplacement étalonnées pour haute tension, puissance, etc.
Les pièces de remplacement qui présentent ces caractéristiques sont identifiées dans ce manuel; les pièces électriques qui présentent ces particularités sont identifiées par la marque " ⚠ " et hachurées dans la liste des pièces de remplacement et les diagrammes schématiques.
Pour assurer la protection, ces pièces doivent être identiques à celles utilisées dans le circuit d'origine. L'utilisation de pièces qui n'ont pas les mêmes caractéristiques que les pièces recommandées par l'usine, indiquées dans ce manuel, peut provoquer des électrocutions, incendies, radiations X ou autres accidents.

LOCATION OF USER'S CONTROL

Front Panel



POWER
Press → On.
Press again → Off.

SENSOR AREA FOR REMOTE CONTROL

MENU
Press → Accesses MAIN MENU.
Press again → Exits MAIN MENU.

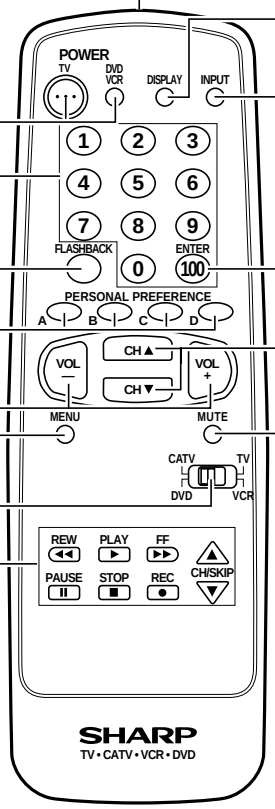
VOLUME UP/DOWN
(+) Increases sound.
(–) Decreases sound.

VIDEO IN 2 L-AUDIO-R

(INSIDE DOOR)

CHANNEL UP/DOWN
(▲) Selects next higher channel.
(▼) Selects next lower channel.

Basic Remote Control Functions



POWER
Press → On.
Press again → Off.

REMOTE KEYPAD
Accesses any channel from keypad.

FLASHBACK
Returns to previous channel.

PERSONAL PREFERENCE
With the Personal Preference buttons, you can program your favorite programs by using the 4 categories A, B, C and D. The channels can be accessed quickly by using these buttons.

VOLUME UP/DOWN
(+) Increases sound.
(–) Decreases sound.
- In menu mode, changes or selects the TV adjustments.

MENU
Press → Accesses MAIN MENU.
Press again → Exits MAIN MENU.

CATV/DVD-TV/VCR MODE SELECT SWITCH
In TV/VCR position, sends power and channel select commands (Channel up/down and Random Access buttons) to the TV and VCR control.
In CATV/DVD position, sends power and channel select commands to a cable TV converter and DVD control.

DVD/VCR CONTROL

Infrared Transmitter Window

DISPLAY
Press → Displays receiving channel for four seconds.
Press again → Removes display.
- Temporarily displays receiving channel when in Closed Caption mode.

INPUT
Press → Switch to external video INPUT 1 mode or COMPONENT mode.
Press 2 times → Switch to external video INPUT 2 mode.
Press 3 times → Switch back to the original TV mode.

ENTER
Used in some instances where a Cable Converter Box requires an "enter" command after selecting channels, when using the REMOTE KEYPAD button.

CHANNEL UP/DOWN
(▲) Selects next higher channel.
(▼) Selects next lower channel.
- Moves the "● " mark of the MENU screens.

MUTE
Press → Mutes sound.
Press again → Restores sound.
- CLOSED CAPTION appears when sound is muted.

Note:
- The above shaded buttons on the Remote Control glow in the dark. To use the glow-in-the-dark display on the remote control, place it under a fluorescent light or other lighting.
- The phosphorescent material contains no radioactive or toxic material, so it is safe to use.
- The degree of illumination will vary depending on the strength of lighting used.
- The degree of illumination will decrease with time and depending on the temperature.
- The time needed to charge the phosphorescent display will vary depending on the surrounding lighting.
- Sunlight and fluorescent lighting are the most effective when charging the display.

INSTALLATION AND SERVICE INSTRUCTIONS

Note: (1) When performing any adjustments to resistor controls and transformers use non-metallic screwdrivers or TV alignment tools.
(2) Before performing adjustments, the TV set must be on at least 15 minutes.

CIRCUIT PROTECTION

The receiver is protected by a 4.0A fuse (F701), mounted on PWB-A, wired into one side of the AC line input.

X-RADIATION PROTECTOR CIRCUIT TEST

After service has been performed on the horizontal deflection system, high voltage system, B+ system, test the X-Radiation protection circuit to ascertain proper operation as follows:

1. Apply 120V AC using a variac transformer for accurate input voltage.
2. Allow for warm up and adjust all customer controls for normal picture and sound.
3. Receive a good local channel.
4. Connect a digital voltmeter to TP653 and make sure that the voltmeter reads 18.9 ±1.1V.
5. Apply external 24.5V DC at TP653 by using an external DC supply, TV must be shut off.
6. To reset the protector, unplug the AC cord and make a short circuit between TP651 and TP652. Now make sure that normal picture appears on the screen.
7. If the operation of the horizontal oscillator does not stop in step 5, the circuit must be repaired before the set is returned to the customer.

HIGH VOLTAGE CHECK

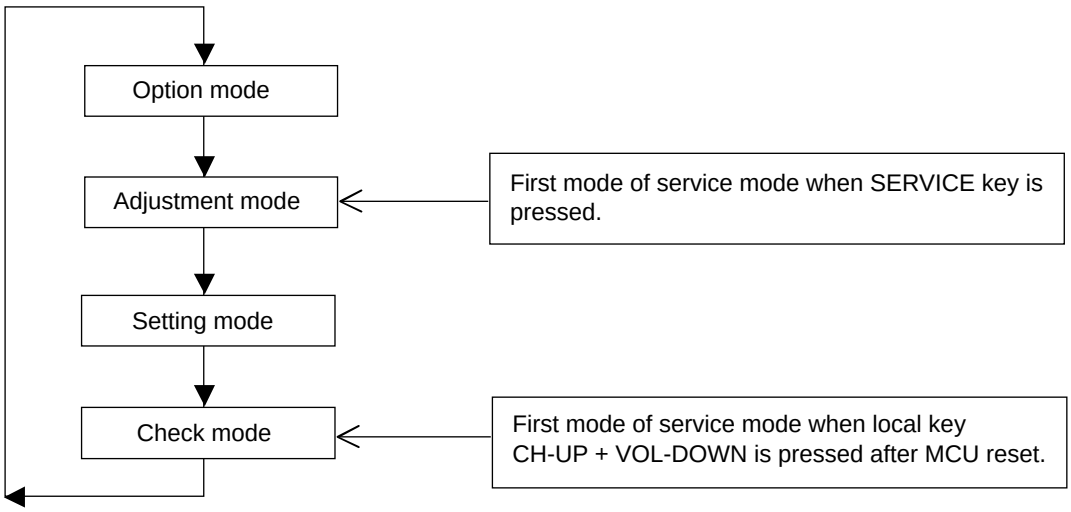
High voltage is not adjustable but must be checked to verify that the receiver is operating within safe and efficient design limitations as specified checks should be as follows:

1. Connect an accurate high voltage meter between ground and anode of picture tube.
2. Operate receiver for at least 15 minutes at 120V AC line voltage, with a strong air signal or a properly tuned in test signal.
3. Enter the service mode and set Y-mute ON by using Service R/C.
4. The voltage should be approximately 28.6kV (at zero beam).
   If a correct reading cannot be obtained, check circuitry for malfunctioning components. After the voltage test, make Y-mute off to the normal mode.

SERVICE MODE

Service Mode Overview

1. Service mode is entered by SERVICE key input or CH-UP +VOL-DOWN input during reset.
2. Service mode is cleared by entering SERVICE key or CH-UP +VOL-DOWN key command during service mode.
3. If key input port (SERVICE) input is LOW, then it is in service mode.
4. During key input port (SERVICE) input is LOW, clearing service mode by key input SERVICE or CH-UP + VOL-DOWN is disabled.
5. Service mode can be switched to 4 modes as follows by key input MENU;


Option mode
Adjustment mode
First mode of service mode when SERVICE key is pressed.
Setting mode
Check mode
First mode of service mode when local key CH-UP + VOL-DOWN is pressed after MCU reset.

6. AFT processing is disabled during service mode. PLL setting data is set to fo data.
7. All user data are set to default during service mode. FAO and SPEAKER user settings are off and on respectively in service mode. Energy Save is off.
8. Sleep timer, View timer and Off timer are inactivated in Service mode.
9. Sound is muting in service mode except at Adjustment Items V20, M01, M02, M03, M04, M05, and M06.

Adjustment Mode Items

No.	Item Name	IC	Register	Range	Default
V01	SUB-PICTURE	1 Chip	CONTRAST	0~127	127
V02	SUB-TINT	1 Chip	TINT	0~127	64
V03	SUB-COLOR	1 Chip	COLOR	0~127	64
V04	SUB-BRIGHT	1 Chip	BRIGHT	0~255	128
V05	SUB-SHARP	1 Chip	VIDEO-TONE	0~63	32
V06	V-SHIFT	1 Chip	V-SHIFT	0~7	4
V07	H-SHIFT	1 Chip	H-PHASE	0~31	16
V08	RF-AGC	1 Chip	RF-Delay	0~127	127
V09	V-SIZE	1 Chip	V-SIZE	0~63	32
V10	PIF-VCO	1 Chip	VIF-VCO	0~63	32
V11	R-CUTOFF	1 Chip	R-CUTOFF	0~255	127
V12	G-CUTOFF	1 Chip	G-CUTOFF	0~255	127
V13	B-CUTOFF	1 Chip	B-CUTOFF	0~255	127
V14	R-DRIVE	1 Chip	R-DRIVE	0~127	64
V15	B-DRIVE	1 Chip	B-DRIVE	0~127	64
V16	SUB-COLOR(YUV)	1 Chip	COLOR	0~127	64
V17	SUB-TINT(YUV)	1 Chip	BASEBAND-TINT	0~127	64
V18	CC-POS	Micron		0~255	32
V19	(Vertical mode)	1 Chip	V-MUTE,SERVICE	0, 1, 2	0
V20	SUB-VOL	1 Chip	A-ATT	0~127	127
V21	H-VCO	1 Chip	H-VCO	0~7	4
M01	MTS-ATT	MTS	ATT	0~15	10
M02	MTS-VCO	MTS	VCO	0~63	32
M03	MTS-FILTER	MTS	FILTER	0~63	28
M04	MTS-WIDEBAND	MTS	WIDEBAND	0~63	27
M05	MTS-SPECTRAL	MTS	SPECTRAL	0~63	32
M06	SUB-VOL	MTS	VOL	0~63	63

■ SELF ADJUSTMENT

H-VCO

1. When there is H-VCO self-adjustment key input for adjustment item H-VCO, self-adjustment is performed.
2. H-FREE(1chip) is set to 1.
3. H-OUT is set by intelligent monitor output.
4. IM input is set as TIM input.
5. H-VCO(1chip) data is changed so that the number of input pulse is 125 inside 8ms interval.
6. When adjustment completed, OSD display and H-VCO self-adjustment status data of EEPROM are updated.
7. H-FREE(1chip), intelligent monitor output and IM input mode are recovered.

RF-AGC

1. When there is RF-AGC self-adjustment key input for adjustment item RF-AGC, self-adjustment is performed.
2. AGC-OUT is set by intelligent monitor output.
3. IM input is set as AD input.
4. By decreasing RF-AGC (1chip) data from current RF-AGC adjustment value to 0, AFT input voltage becomes the maximum setting value.
5. Increase RF-AGC(1chip) data, when AFT input voltage is at (max. 0.3V) point, adjustment is completed.
6. When adjustment completed, OSD display and RF-AGC self-adjustment status data of EEPROM are updated.
7. Intelligent monitor output and IM input mode are recovered.

PIF-VCO

1. When there is PIF-VCO self-adjustment key input for adjustment item PIF-VCO, self-adjustment is performed.
2. VIF-DEF(1chip) is set to 1.
3. AFC is set by intelligent monitor output.
4. IM input is set as AD input.
5. VIF-VCO(1chip) data is changed so that input voltage becomes 2.5V.
6. When adjustment completed, OSD display and PIF-VCO self-adjustment status data of EEPROM are updated.
7. VIF-DEF(1chip), intelligent monitor output and IM input mode are recovered.

MTS-FILTER

Adjustment is performed in the center of the range when FILTER status is OK.

1. If data is changed from 0 to 63, point where NG → OK is A and point where OK → NG is B.
2. If data is changed from 63 to 0, point where NG → OK is C and point where OK → NG is D.
3. (A+B+C+D)/4 is the adjustment point.

Setting Mode Items

No.	Item Name	IC	Register	Range	Default
F01	VideoTone-Gain (TV)	1chip	V-TONE	0 / 1	0
F02	VideoTone-Gain (AV)	1chip	V-TONE	0 / 1	0
F03	VideoTone-Gain(YUV)	1chip	V-TONE	0 / 1	0
F04	ABCL	1chip	ABCL	0 / 1	0
F05	BS	1chip	BS-OFF	0 / 1	0
F06	ABCL-G	1chip	ABCL-G	0 / 1	0
F07	SHP-AV	OFFSET	VIDEO-TONE(OFFSET)	-16~+16	0
F08	SHP-YUV	OFFSET	VIDEO-TONE(OFFSET)	-16~+16	0
F09	RGB-CLIP	1chip	ExtRGB-Clip	0 / 1	0
F10	E-SAVE	OFFSET	CONTRAST(OFFSET)	0~63	30
F11	FAO-VOL	1chip	A-ATT	0~127	120
F12	PIF-G	1chip	VIF-GAIN	0~7	4
F13	Y-DELAY(TV)	1chip	Y-Delay	0~7	0
F14	Y-DELAY(AV)	1chip	Y-Delay	0~7	0
F15	Y-DELAY(YUV)	1chip	Y-Delay	0~7	0
F16	TINT-AV	OFFSET	TINT(OFFSET)	-32~+32	0
F17	COL-AV	OFFSET	COLOR(OFFSET)	-32~+32	0
F18	R-DRI(R2)	OFFSET	R-DRI(OFFSET)	-32~+32	0
F19	R-DRI(R)	OFFSET	R-DRI(OFFSET)	-32~+32	0
F20	R-DRI(B)	OFFSET	R-DRI(OFFSET)	-32 ~+32	0
F21	B-DRI(R2)	OFFSET	B-DRI(OFFSET)	-32~+32	0
F22	B-DRI(R)	OFFSET	B-DRI(OFFSET)	-32~+32	0
F23	B-DRI(B)	OFFSET	B-DRI(OFFSET)	-32~+32	0
F24	V-FREE	1chip	V-FREE	0 / 1	0
F25	GAMMA	1chip	GAMMA	0~3	0
F26	TRAP(TV)	1chip	TRAP-FINE	0~3	2
F27	TRAP(AV)	1chip	TRAP-FINE	0~3	2
F28	H-FREE	1chip	H-FREE	0 / 1	0
F29	1W(TV)	1chip	V.Window	0 / 1	0
F30	1W(AV)	1chip	V.Window	0 / 1	0
F31	YLPF	1chip	YSW-LPF	0 / 1	1
F32	BS-D	1chip	BS-DISCHARGE	0~3	0
F33	BS-C	1chip	BS-CHARGE	0~3	0
F34	SL(TV)	1chip	S-SLICE DOWN	0~3	0
F35	SL(AV)	1chip	S-SLICE DOWN	0~3	0
F36	SL(YUV)	1chip	S-SLICE DOWN	0~3	0
F37	AFC2	1chip	AFC2-G	0 / 1	0
F38	VD(TV)	1chip	Vsync-Det	0 / 1	0
F39	VD(AV)	1chip	Vsync-Det	0 / 1	0
F40	AS(TV)	1chip	Auto-Slice	0 / 1	0
F41	AS(AV)	1chip	Auto-Slice	0 / 1	0
F42	AS(YUV)	1chip	Auto-Slice	0 / 1	0
F43	FBP(TV)	1chip	FBP Vth	0 / 1	0
F44	FBP(AV)	1chip	FBP Vth	0 / 1	0
F45	FBP(YUV)	1chip	FBP Vth	0 / 1	0
F46	C.Clip Level	1chip	C.Clip Level	0 / 1	0
F47	PSW	MTS	PSW	0 / 1	0
F48	FAO-VOL	MTS	VOL	0~63	60
F49	CP	PLL	CP	0 / 1	0
F50	CC LEVEL	MICRON			0
F51	OSD POS	MICRON			0
F52	OFFSET-ADJ-COL	1 chip	COLOR	-32~32	0
F53	OFFSET-ADJ-TINT	1 chip	TINT	-32~32	0
F54	OFFSET-ADJ-TINT-YUV	1 chip	BASEBAND-TINT	-32~32	0

Option Mode Items

No	ITEM	0	1	DEFAULT
O01	DEM0	Without DEMO	With DEMO	1
O02	DOWNLOAD	Without V-CHIP OP	With V-CHIP OP	1
O03	V-CHIP	Without V-CHIP	With V-CHIP	1
O04	SPEAKER	Without SPEAKER	With SPEAKER	1
O05	FAO	Without FAO	With FAO	1
O06	P.PREF	Without P.PREF	With P.PREF	1
O07	UNIV+	Without UNIV+	With INIV+	1
O08	VIEW TIMER	Without VIEW TIMER	With VIEW TIMER	1
O09	EZ-SETUP	EZ-SETUP	AUTO PRESET	1
O10	PON-CH	Without POWER-ON	With POWER-ON	1
O11	FAV-COL	FAV-COL	COL-TEMP	1
O12	COMPONENT	Without COMPONENT	With COMPONENT	1
O13	AV	Without AV	With AV	1
O14	AV2	AV1 system	AV2 system	1
O15	MTS	Without MTS	With MTS	1
O16	TONE-CTRL	Without S-ADJ	With S-ADJ	1
O17	AUTO-OFF	Without AUTO-OFF	With AUTO-OFF	1
O18	INIT-LANG	ENGLISH	SPANISH	0
O19	SETUP-FLAG	NO SETUP	AUTO SETUP	1
O20	FR.AV (Front, Rear AV)	3: Display "FRONT A/V INPUTS" and "REAR A/V INPUTS" in DEMO mode. 2: Display "FRONT A/V INPUTS" only in DEMO mode. 1: Display "REAR A/V INPUTS" only in DEMO mode. 0: No display of above lines in DEMO mode.		2

Check Mode

Micron mask version, software version and ROM correction function status are displayed in check mode.

ADJUSTMENT METHOD

Caution: to get into the service mode, one of the ways is press direct key for service items. the other ways is short the main chassis JA309 and JA402

There is three stage of Service Mode data
First stage data from V01 ~ M06
to go into second stage of service mode data, press MENU key
Second stage data from F01 ~ F51
to go into third stage of service mode data, press MENU key
Third stage data from 001 ~ 020

Below is the contents of these data

First Stage

Data	Service Mode	Function	Range	Default Data
V01	SUB-PICTURE	CONTRAST	0~127	127
V02	SUB-TINT	TINT	0~127	64
V03	SUB-COLOR	COLOR	0~127	64
V04	SUB-BRIGHT	BRIGHT	0~255	128
V05	SUB-SHARP	VIDEO-TONE	0~63	32
V06	V-SHIFT	V-SHIFT	0~7	7
V07	H-SHIFT	H-PHASE	0~31	16
V08	RF-AGC	RF-DELAY	0~127	127
V09	V-SIZE	V-SIZE	0~63	32
V10	PIF-VCO	VIF-VCO	0~63	32
V11	R-CUTOFF	R-CUTOFF	0~255	64
V12	G-CUTOFF	G-CUTOFF	0~255	64
V13	B-CUTOFF	B-CUTOFF	0~255	64
V14	R-DRIVE	R-DRIVE	0~127	64
V15	B-DRIVE	B-DRIVE	0~127	64
V16	SUB-COLOR(YUV)	COLOR	0~127	64
V17	SUB-TINT(YUV)	BASEBAND-TINT	0~127	64
V18	CC-POS		0~255	
V19		CUT OFF		
V20	SUB-VOL	A-ATT	0~127	127
V21	H-VCO	H-VCO	0~7	
M01	MTS-ATT	ATT (MTS)	0~15	10
M02	MTS-VCO	VCO (MTS)	0~63	32
M03	MTS-FILTER	FILTER (MTS)	0~63	28
M04	MTS-WIDEBAND	WIDEBAND (MTS)	0~63	27
M05	MTS-SPECTRAL	SPECTRAL (MTS)	0~63	32
M06	SUB-VOL	VOL (MTS)	0~63	63

Auto Adjustment Item
1. H-VCO (Currently need manual adj)
2. RF-AGC
3. PIF-VCO
4. MTS-FILTER

Second Stage

Data	Service Mode	Function	Range	Default Data
F01	VIDEO TONE -GAIN (TV)	V-TONE	0/1	0
F02	VIDEO TONE -GAIN (AV	V-TONE	0/1	0
F03	VIDEO TONE -GAIN(YUV)	V-TONE	0/1	0
F04	ABCL	ABCL	0/1	0
F05	BS	BS-OFF	0/1	0
F06	ABCL-G	ABCL-G	0/1	0
F07	SHP-AV	VIDEO-TONE(OFFSET)	-16~+16	0
F08	SHP-YUV	VIDEO-TONE(OFFSET)	-16~+16	0
F09	SHP-CLIP	EXTRGB-CLIP	0/1	0
F10	E-SAVE	CONTRAST(OFFSET)	0~63	30
F11	FAO-VOL	A-ATT	0~127	120
F12	PIF-G	VIF-GAIN	0~7	0
F13	Y-DELAY(TV)	Y-DELAY	0~7	0
F14	Y-DELAY(AV)	Y-DELAY	0~7	0
F15	Y-DELAY(YUV)	Y-DELAY	0~7	0
F16	TINT-AV	TINT(OFFSET)	-32~+32	0
F17	COL-AV	COLOR(OFFSET)	-32~+32	0
F18	R-DRI(R2)	R-DRI(OFFSET)	-32~+32	0
F19	R-DRI(R)	R-DRI(OFFSET)	-32~+32	0
F20	R-DRI(B)	R-DRI(OFFSET)	-32~+32	0
F21	B-DRI(R2)	B-DRI(OFFSET)	-32~+32	0
F22	B-DRI(R)	B-DRI(OFFSET)	-32~+32	0
F23	B-DRI(B)	B-DRI(OFFSET)	-32~+32	0
F24	V-FREE	V-FREE	0/1	0
F25	GAMMA	GAMMA	0~3	0
F26	TRAP(TV)	TRAP-FINE	0~3	2
F27	TRAP(AV)	TRAP-FINE	0~3	2
F28	H-FREE	H-FREE	0/1	0
F29	1W(TV)	V.WINDOW	0/1	0
F30	1W(AV)	V.WINDOW	0/1	0
F31	YLPF	YSW-LPF	0/1	1
F32	BS-D	BS-DISCHARGE	0~3	0
F33	BS-C	BS-CHARGE	0~3	0
F34	SL(TV)	S-SLICE DOWN	0~3	0
F35	SL(AV)	S-SLICE DOWN	0~3	0
F36	SL(YUV)	S-SLICE DOWN	0~3	0
F37	AFC2	AFC2-G	0/1	0
F38	VD(TV)	VSYNC-DET	0/1	0
F39	VD(AV)	VSYNC-DET	0/1	0
F40	AS(TV)	AUTO-SLICE	0/1	0
F41	AS(AV)	AUTO-SLICE	0/1	0
F42	AS(YUV)	AUTO-SLICE	0/1	0
F43	FBP(TV)	FBP VTH	0/1	0
F44	FBP(AV)	FBP VTH	0/1	0
F45	FBP(YUV)	FBP VTH	0/1	0
F46	C.CLIP LEVEL	C.CLIP LEVEL	0/1	0
F47	PSW	PSW	0/1	0
F48	FAO-VOL	VOL	0~63	60
F49	CP	CHARGE PUMP	0/1	0
F50	CC LEVEL			
F51	OSD POS			
F52	COL OFFSET	(SUR → NOR)		0
F53	TINT OFFSET	(SUR → NOR)		0
F54	TING-YUV	TINT-YUV(OFFSET)		0

Third Stage

Data	Service Mode	DATA="0"	DATA="1"	Default Data
001	DEMO	DEMO OFF	ON	1
002	DOWNLOAD	V-CHIP OP OFF	ON	1
003	V-CHIP	V-CHIP OFF	ON	1
004	SPEAKER	SPEAKER OFF	ON	1
005	FAO	FAO OFF	ON	1
006	P.PREF	P.REF OFF	ON	1
007	UNIV+	UNIV+ OFF	ON	1
008	VIEW TIMER	VIEW TIMER OFF	ON	1
009	EZ-SETUP	EZ-SETUP	AUTO PRESET	1
010	PON-CH	POWER-ON OFF	0N	1
011	FAV-COL	FAV-COL	COL-TEMP	1
012	COMPONENT	COMPONENT OFF	ON	1
013	AV	AV OFF	ON	1
014	AV2	AV2 OFF	ON	1
015	MTS	MTS OFF	ON	1
016	TONE-CTRL	S-ADJ OFF	ON	1
017	AUTO-OFF	AUTO-OFF OFF	ON	1
018	INIT-LANG	ENGLISH	SPANISH	1
019	SETUP-FLAG	NO SET UP	AUTO SET UP	1
020	AV-FR	"0"=NO AV "1"=REAR "2"=FRONT "3"=REAR & FRONT		3

ADJUSTMENT ITEM	OPTION SET UP		
ADJUSTMENT POSITION	REFER AS BELOW	STEP RANGE	REFER AS BELOW
CONTROL	–		
PRE-ADJUST REQUIREMENT	–		
CONTENT	–		
INPUT CONDITION	14UFM1		
OUTPUT	OSD CHECKING		

ADJUSTMENT PROCEDURE

BUS OPTION FOR THIRD STAGE SERVICE DATA

FUNCTION	001 DEMO	002 DOWNLOAD	003 V-CHIP	004 SP	005 FAO	006 P.PREF	007 UNIV+	008 VIEW	009 EZ	010 PON-CH
14UFM1	1	1	1	0	0	0	0	1	0	0
CU14FM1	1	0	0	0	0	0	0	1	0	0
20U-FS1	1	1	1	1	1	1	1	1	0	0
CU20FS1	1	0	0	1	1	1	1	1	0	0
DEF	**"0"=DISABLE "1"=ENABLE** 009 → "0"=EZ-SETUP "1"=AUTO PRESET									

BUS OPTION FOR THIRD STAGE SERVICE DATA

FUNCTION	011 FAV-COL	012 COMP	013 AV	014 AV2	015 MTS	016 TONE	017 AUTO	018 LAN	019 SETUP	020 AV-FR
14UFM1	1	0	1	0	0	0	0	0	1	3
CU14FM1	1	0	1	0	0	0	0	0	1	3
20U-FS1	1	1	1	1	1	1	0	0	1	3
CU20FS1	1	1	1	1	1	1	0	0	1	3
DEF	011 → "0"=FAV-COL "1"=COL-TEMP 018 → "0"=ENGLISH "1"=SPANISH 019 → "0"=NO SET UP "1"=AUTO SETUP									

ADJUSTMENT ITEM	OPTION SET UP		
ADJUSTMENT POSITION	REFER AS BELOW	STEP RANGE	REFER AS BELOW
CONTROL	–		
PRE-ADJUST REQUIREMENT	–		
CONTENT	–		
INPUT CONDITION	14UFM1		
OUTPUT	OSD CHECKING		

ADJUSTMENT PROCEDURE

DATA SETUP FOR FIRST AND SECOND STAGE SERVICE DATA

FUNCTION	V05 SHARP	F13 Y-DL(TV)	F14 Y-DL(AV)	F16 TINT-AV	F17 COL-AV	F30 1W(AV)	F34 SL(TV)	F38 VD(TV)	F40 AS(TV)	F49 CP
14UFM1	50	5	2	8	4	1	1	1	1	1
CU14FM1	50	5	2	8	4	1	1	1	1	1
20U-FS1	50	5	2	8	4	1	1	1	1	1
CU20FS1	50	5	2	8	4	1	1	1	1	1
DEF										

DATA SETUP FOR FIRST AND SECOND STAGE SERVICE DATA

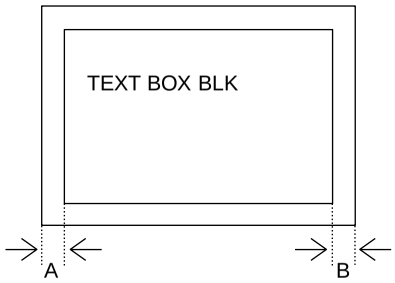
FUNCTION	F18 R-D(R2)	F19 R-D(R)	F20 R-D(B)	F21 B-D(R2)	F22 B-D(R)	F23 B-D(B)	F52 C-OF	F53 TI-OF	F35 SL(AV)	F41 AS(AV)	F48 FAO-VOL
14UFM1	**+8**	+3	-2	**-18**	-8	+6	0	+8	1	1	60
CU14FM1	**+8**	+3	-2	**-18**	-8	+6	0	+8	1	1	60
20U-FS1	**+8**	+3	-2	**-18**	-8	+6	0	+8	1	1	**58**
CU20FS1	**+8**	+3	-2	**-18**	-8	+6	0	+8	1	1	**58**
DEF											

ADJUSTMENT ITEM	+B ADJUSTMENT		
ADJUSTMENT POSITION	–	STEP RANGE	–
CONTROL	–		
PRE-ADJUST REQUIREMENT	AFTER ALL ADJUSTMENT FINISHED.		
CONTENT	US 4 CH LION HEAD (MONOSCOPE PATTERN)		
INPUT CONDITION	AC 120V, RF INPUT		
OUTPUT	CONNECT THE DIGITAL VOLTMETER AND MEASURE +B LINE		
ADJUSTMENT PROCEDURE	ADJUST R737 SO THAT THE +B VOLTAGE IN VOLTMETER READING IS AS BELOW.		
	[VOLTAGE COMFIRMATION] 130 ± 0.5VDC (CHECKING SPEC : 130V ± 0.8 VDC)		

ADJUSTMENT ITEM	H-POSITION		
ADJUSTMENT POSITION	V07	STEP RANGE	0-31
CONTROL	I^2C BUS CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, CRT-PURITY		
CONTENT	US 4 CH LION HEAD (MONOSCOPE)		
INPUT CONDITION	AC 120V, US MAGNETIC FIELD		
OUTPUT	CONFIRMATION BY CRT SCREEN		
ADJUSTMENT PROCEDURE	1. ADJUST THE **V07** BUS DATA TO HAVE A BALANCE POSITION TO SPEC OF **A=B**. 2. IF CANNOT MAKE IT TO **A=B**, ADJ FROM THE BEST POINT SO THAT **B** SLIDELY SMALLER THAN **A**		
	[CHECKING SPEC] LEFT AND RIGHT SYMMETRICAL		

ADJUSTMENT ITEM	V-SIZE		
ADJUSTMENT POSITION	V09	STEP RANGE	0~63
CONTROL	I^2C CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, CRT PURITY, V-PHASE, +B ADJUST		
CONTENT	US 4 CH LION HEAD		
INPUT CONDITION	AC 120V		
OUTPUT	CONFIRMATION BY CRT SCREEN		
ADJUSTMENT PROCEDURE	ADJUST THE V09 BUS DATA UNTILL THE OVERSCAN BECOME AS SPECIFIED BELOW. CAUTION: - PLEASE AGING TV MORE THAN 10 MINUTES BEFORE ADJUSTMENT.		
	[CHECKING SPEC] OVERSCAN 10 ± 2.5%		

ADJUSTMENT ITEM	V-PHASE		
ADJUSTMENT POSITION	V06	STEP RANGE	0-7
CONTROL	I^2C CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, CRT-PURITY		
CONTENT	US 4 CH LION HEAD (MONOSCOPE PATTERN)		
INPUT CONDITION	120V, RF INPUT, ZERO MAGNETIC FIELD		
OUTPUT	CONFIRMATION ON CRT SCREEN		
ADJUSTMENT PROCEDURE	ADJUST V06 BUS DATA TO HAVE MOST ACCEPTABLE VERTICAL POSITION. THE MONOSCOPE PATTERN SHOULD BE BALANCE IN VERTICAL POSITION **NOTE: THE DATA FOR V06 LIMIT AT <= 04, EVEN POSITION GOOD ENOUGH**		
	[CHECKING CONFIRMATION]		

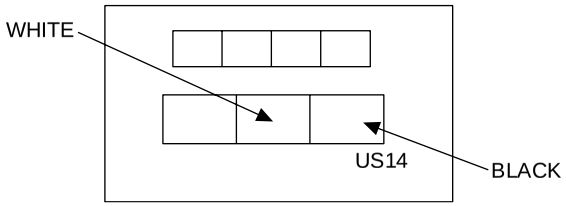
ADJUSTMENT ITEM	CLOSED CAPTION SET UP		
ADJUSTMENT POSITION	V18	STEP RANGE	0~255
CONTROL	I^2C CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP		
CONTENT	US 4 CH LION HEAD		
INPUT CONDITION	AC 120V		
OUTPUT	CONFIRMATION ON CRT DISPLAY.		
ADJUSTMENT PROCEDURE	1) BY SELECTING THE **V18**, BOX BLK TEXT WILL BE APPEARED. 2) ADJUST THE **V18** BUS DATA TO HAVE A BALANCE POSITION TO SPEC OF A=B.  		
	[CHECKING SPEC] LEFT AND RIGHT SYMMETRICAL		

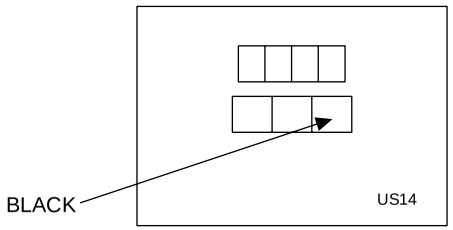
ADJUSTMENT ITEM	H-VCO		
ADJUSTMENT POSITION	V21	STEP RANGE	0-7
CONTROL	I^2C CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP		
CONTENT	NO SIGNAL (RASTER) CONDITION		
INPUT CONDITION	AC 120V		
OUTPUT	IC 801 PIN 11		
ADJUSTMENT PROCEDURE	1) GO TO SERVICE MODE, 2) GO TO SERVICE DATA **V21**, ADJ UNTIL FREQ AS BELOW		
	[CHECKING SPEC] **FREQ = 15.735 ± 0.2 KHz**		

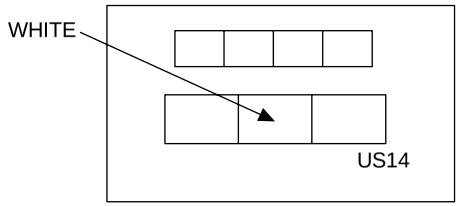
ADJUSTMENT ITEM	PIF-VCO		
ADJUSTMENT POSITION	V10	STEP RANGE	0~63
CONTROL	I²C CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP		
CONTENT	NO SIGNAL (RASTER) CONDITION		
INPUT CONDITION	AC 120V		
OUTPUT	CONFIRMATION ON CRT DISPLAY (AUTO), IC801 PIN 2 VOLTAGE (MANUAL).		
ADJUSTMENT PROCEDURE	(AT SELF ADJUSTMENT MODE) 1) GO INTO SERVICE MODE, BY SELECTING THE SERVICE DATA V10 2) PRESS THE R/C FOR AUTO PIF-VCO KEY, OSD APPEAR “OK” AT SCREEN 3) IF APPEAR “NG” PLS REPEAT STEP2 4) AFTER “OK” CONDITION STEP DOWN ONE STEP. (AT MANUAL ADJUSTMENT MODE) 1) GO INTO SERVICE MODE, BY SELECTING THE SERVICE DATA V10 2) ADJUST THE DATA UP/DOWN UNTIL IC801 PIN 2 VOLTAGE BECOME AS SPECIFIED BELOW		
	[CHECKING SPEC] 2.5 ± 0.5 V DC (CHECKING SPEC : 2.50 ± 1.5V)		

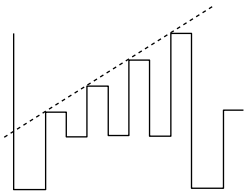
ADJUSTMENT ITEM	RF-AGC		
ADJUSTMENT POSITION	V08	STEP RANGE	0-127
CONTROL	I²C CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP		
CONTENT	US10CH HALF COLOR BAR		
INPUT CONDITION	RF INPUT FIELD STRENGTH **56dBµV** (FIX)		
OUTPUT	TUNER AGC TERMINAL (TP 201) OR CRT DISPLAY CONFIRMATION		
ADJUSTMENT PROCEDURE	**(AT SELF ADJUSTMENT MODE)** 1. GO TO SERVICE MODE 2. GO TO SERVICE DATA **V08**, PRESS R/C TO OPEARATE AUTO-AGC KEY AND CONFIRM THE **OK** DISPLAY ON THE SCREEN. 3. IF APPEAR NG PLS REPEAT STEP 2 AGAIN. **(AT MANUAL ADJUSTMENT MODE)** 1. ADJUST THE V08 BUS DATA UNTIL AGC TERMINAL VOLTAGE BECOME MAXIMUM, THEN DROP 0.1V BELOW MAXIMUM VOLTAGE. 2. CHANGE THE ANTENNA INPUT SIGNAL TO 63-67 dBµV, AND MAKE SURE THERE IS NO NOISE 3. CHANGE THE ANTENNA INPUT SIGNAL TO 90-95 dBµV TO BE SURE THAT THERE IS NO CROSS MODULATION BEAT.		
	[CHECKING SPEC] MAX - 0.1V dc		

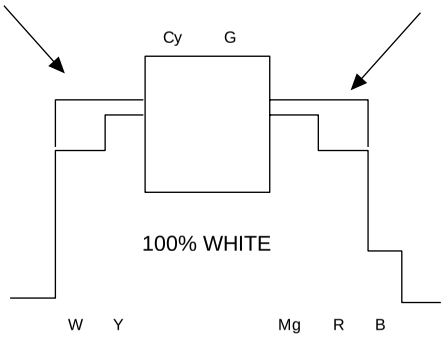
ADJUSTMENT ITEM	SCREEN		
ADJUSTMENT POSITION	V11,V12,V13	STEP RANGE	0-255
CONTROL	I^2C CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP		
CONTENT	WINDOW PATTERN OR US4CH LION HEAD		
INPUT CONDITION	120V		
OUTPUT	CONFIRMATION ON CRT DISPLAY		
ADJUSTMENT PROCEDURE	1) IN SERVICE MODE, SET **V04&V11&V12&V13** TO 127; **V14&V15** TO 64, GET IN Y-MUTE BY R/C AND SET **V19** TO "1", PICTURE APPEAR IN CUT-OFF CONDITION 2) ADJUST THE SCREEN SO THAT CUT-OFF LINE APPEAR IN LOW BRIGHT, THEN JUDGE THAT WHETHER THE CUT-OFF LINE APPEAR IN RED OR GREEN OR BLUE COLOR, IN THIS CONDITION V11=R-CUTOFF, V12=G-CUTOFF, V13=B-CUTOFF, FIX THE DATA OF THE COLOR APPEAR IN CUTOFF LINE AND USE R/C TO ADJUST THE OTHER TWO CUT-OFF DATA SO THAT CUT-OFF LINE COLOR BECOME WHITE. 3) TURN THE SCREEN VR OF FBT SO THAT CUT-OFF LINE JUST DISAPPEAR AND USE R/C TO SET **V19** TO "0", NEXT DISABLE THE Y-MUTE SO THAT PICTURE APPEAR IN NORMAL MODE.		
	[VOLTAGE CONFIRMATION]		

ADJUSTMENT ITEM	WHITE BALANCE		
ADJUSTMENT POSITION	V14,V15,V11,V12,V13	STEP RANGE	0-127, 0~255
CONTROL	I^2C BUS CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, SCREEN		
CONTENT	23CH 501RE WINDOW PATTERN		
INPUT CONDITION	120V		
OUTPUT	CRT SCREEN DISPLAY.		
ADJUSTMENT PROCEDURE	1) **WHITE** (HIGH BEAM) FIRST LET THE GUM POINT AT **BLACK** POSITION (AS DRAWING ATTACH), ADJ V04 UNTIL **BRIGHTNESS Y** BECOME **5 cd/m2**, THEN LET THE GUN POINT AT **WHITE** POSITION (AS DRAWING ATTACH), ADJUST **V01** UNTIL BRIGHTNESS Y BECOME **150 cd/m2**, ADJUST THE BUS DATA OF **V14** (R DRIVE), **V15**(B DRIVE) UNTIL THE AXIS OF COLOR TEMPERATURE BECOME **X=0.273, Y=0.280** 2) **BLACK** (LOW BEAM) LET THE GUN POINT AT BLACK POSITION, IF THE VALUE SHIFTED AWAY FROM THE DATA ADJUSTED IN STEP 1), ADJUST AGAIN THE TWO SERVICE DATA WHICH HAVE CHOSEN AT SCREEN ADJUST SO THAT TO OBTAIN THE SIMILAR AXIS AS ABOVE. *__WARNING:__ DO NOT DISTURB THE MINI STEP GUN DATA DURING THIS ADJUSTMENT. **REPEAT STEP 1), 2) TO GET A REGULATED POSITION.  		
	[CHECKING CONFIRMATION] X=0.273, Y=0.280 (11,600°K + 1 MPCD)		

ADJUSTMENT ITEM	SUB-BRIGHT		
ADJUSTMENT POSITION	V04	STEP RANGE	0-255
CONTROL	I²C CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, SCREEN, WHITE BALANCE		
CONTENT	WINDOW PATTERN		
INPUT CONDITION	120V		
OUTPUT	CRT SCREEN DISPLAY.		
ADJUSTMENT PROCEDURE	1) LET THE GUN POINT AT BLACK POSITION (AS ATTACH DRAWING), ADJUST V04 BUS DATA UNTIL BRIGHTNESS Y=0.5 cd/m2, **THEN STEP DOWN MORE 4 STEP**  		
	[VOLTAGE CONFIRMATION] BRIGHTNESS Y=0.5 cd/m2, THEN STEP DOWN MORE 4 STEP		

ADJUSTMENT ITEM	SUB-PICTURE		
ADJUSTMENT POSITION	V01	STEP RANGE	0-127
CONTROL	I²C BUS CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, SCREEN, WHITE BALANCE, SUB-BRIGHTNESS		
CONTENT	WINDOW PATTERN		
INPUT CONDITION	120V		
OUTPUT	CRT SCREEN DISPLAY.		
ADJUSTMENT PROCEDURE	1) LET THE GUN POINT AT WHITE POSITION (AS ATTACH DRAWING), ADJUST **V01** BUS DATA UNTIL BRIGHTNESS Y=**150 cd/m2.** **NOTE: ALLOWABLE DATA FOR V01 IS >= 90, EVEN Y CAN'T MATCH THE SPEC**  		
	[VOLTAGER CONFIRMATION] BRIGHTNESS Y=180 cd/m2		

ADJUSTMENT ITEM	SUB-TINT		
ADJUSTMENT POSITION	V02	STEP RANGE	0-127
CONTROL	I²C CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, VCO ADJ, RF-AGC		
CONTENT	US 10 CH HALF COLOR BAR PATTERN		
INPUT CONDITION	120V		
OUTPUT	B-AMP TR BASE (TP851) CONFIRRM WITH OSCILLOSCOPE		
ADJUSTMENT PROCEDURE	1) GET IN Y-MUTE FUNCTION BY R/C. 2) ADJUST THE **V02** BUS DATA TO GET A WAVEFORM AS BELOW. 3) DISABLE THE Y-MUTE **PLS TAKE NOTE THAT SERVICE MODE DATA F53 NEED TO SET +8  B-AMP BASE (TP851) MUST BE IN STEPPING LEVEL **[CONFIRMATION]**		

ADJUSTMENT ITEM	SUB-COLOR		
ADJUSTMENT POSITION	V03	STEP RANGE	0-127
CONTROL	I²C BUS CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, VCO ADJ, RF-AGC, **SUB-PICT, SUB-TINT**		
CONTENT	US 10 CH HALF COLOR BAR PATTERN		
INPUT CONDITION	120V		
OUTPUT	R-AMP TR BASE (TP854) CONFIRRM WITH OSCILLOSCOPE		
ADJUSTMENT PROCEDURE	1) SET THE **V03** BUS DATA TO GET A WAVEFORM AS BELOW 2) THIS WAVEFORM SHOWS THAT THE 75% WHITE & RED PORTIONS OF COLOR BAR BEAT AT THE SAME LEVEL 3) AFTER THAT PLS **STEP UP 10 STEP** DT AT V03.  **[CHECKING CONFIRMATION]**		

ADJUSTMENT ITEM	X-RAY PROTECTION OPERATING CONFIRMATION		
ADJUSTMENT POSITION	–	STEP RANGE	–
CONTROL	–		
PRE-ADJUST REQUIREMENT	AFTER ALL ADJUSTMENT FINISHED.		
CONTENT	US 4 CH LION HEAD (MONOSCOPE PATTERN)		
INPUT CONDITION	AC 120V, RF INPUT		
OUTPUT	CONFIRMATION BY THE CRT		
ADJUSTMENT PROCEDURE	SET THE USER CONTROL TO SHIPMENT POSITION. **[VOLTAGE CONFIRMATION]** CHECK THE VOLTAGE OF P603 PIN 3 AS SPECIFIED BELOW. **[OPERATION CONFIRMATION]** SUPPLY THE DC VOLTAGE TO P603 PIN 3 AND MAKE SURE THE PROTECTOR IS FUNCTIONED. HORIZONTAL OSCILATION STOP AND PICTURE DISAPPEAR. **[RECOVER INFORMATION]** PULL OUT THE AC CORD. **[CAUTION]** FROM THE RECOVER CONFIRMATION MENTIONED ABOVE, THE AC CODE MUST BE PULLED OUT AT LEAST 4 SECOND BEFORE PLUGGING IN AGAIN.(IN ORDER TO MAKE SURE THE µ-COM HAS BEEN RESET.)		
	[VOLTAGE CONFIRMATION] TP VOLTAGE: **18.9± 1.1V DC** OPERATION VOLTAGE: **24.5V**		

ADJUSTMENT ITEM	HIGH VOLTAGE		
ADJUSTMENT POSITION	–	STEP RANGE	–
CONTROL	–		
PRE-ADJUST REQUIREMENT	AFTER ALL ADJUSTMENT FINISHED.		
CONTENT	US 4 CH LION HEAD (MONOSCOPE PATTERN)		
INPUT CONDITION	AC 130V, RF INPUT		
OUTPUT	R-AMP TR BASE (TP854) CONFIRRM WITH OSCILLOSCOPE		
ADJUSTMENT PROCEDURE	SET THE USER CONTROL TO SHIPMENT SETTING POSITION. PUSH ON Y-MUTE BY R/C CONFIRM THE VOLTAGE OF CRT ANODE BY HIGH VOLTAGE METER AND MAKE SURE THE READING IS AS BELOW. **HIGH VOLTAGE** BELOW **30kV**		
	[CAUTION POINT] USE ELECTROSTATIC HI-VOLTAGE METER AND FOLLOW THE UL/DHHS STANDARD TO MAKE CORRECTION AND CONTROL.		

ADJUSTMENT ITEM	V-CHIP		
ADJUSTMENT POSITION	–	STEP RANGE	–
CONTROL	–		
PRE-ADJUST REQUIREMENT	AFTER ALL ADJUSTMENT FINISHED.		
CONTENT	UHF 15 CH (V-CHIP TRANSMISION SIGNAL CH)		
INPUT CONDITION	AC 120V, RF INPUT		
OUTPUT	CONFIRMATION BY THE CRT		
ADJUSTMENT PROCEDURE	1) RECEIVE THE UHF 15 CH. 2) PUSH THE DISPLAY KEY (R/C), MAKE SURE THAT THE OSD V-CHIP RATING DISPLAY IS EQUAVALENCE TO TRANSMISSION RATING.		
	[VOLTAGE CONFIRMATION]		

ADJUSTMENT ITEM	TRI-VISION		
ADJUSTMENT POSITION	–	STEP RANGE	–
CONTROL	–		
PRE-ADJUST REQUIREMENT	AFTER ALL ADJUSTMENT FINISHED.		
CONTENT	RATING SYS. DOWNLOAD SIGNAL A/B (PRCC SIG) INCLUDED SIGNAL.		
INPUT CONDITION	AC 120V, RF INPUT		
OUTPUT	CONFIRMATION BY CRT SCREEN		
ADJUSTMENT PROCEDURE	**(DOWNLOADING CONFIRMATION)** 1) RECEIVE THE DOWNLOAD A SIGNAL. 2) SELECT V-CHIP CONTROL MENU THEN ON THE DOWNLOAD. 3) UNPLUG THE AC THEN PLUG AGAIN. 4) BACK TO V-CHIP CONTROL MENU, CHECK THE DOWNLOADED RATIING AND NAME. **(DOWNLOADING CONFIRMATION)** 1) RECEIVE THE DOWNLOAD B SIGNAL. 2) UNPLUG THE AC CORD AND PLUG IT AGAIN. 3) BACK TO V-CHIP CONTROL MENU, CHECK THE DOWNLOADED RATING AND NAME. ∗ Do check one sample that been picked up for presenting the specified group sample.		
	[COMFIRMATION]		

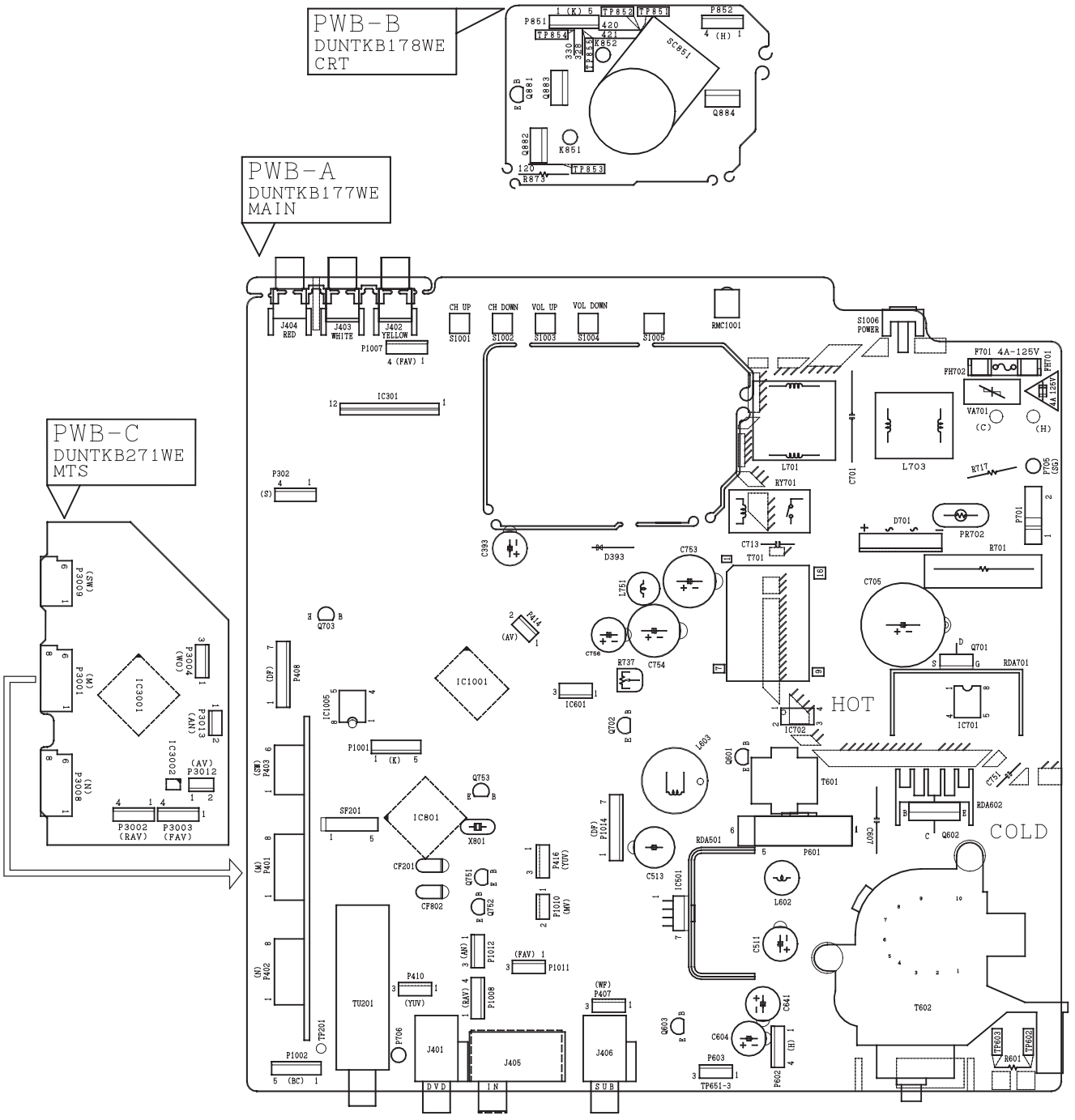
ADJUSTMENT ITEM	MS LEVEL ADJUSTMENT		
ADJUSTMENT POSITION	M01	STEP RANGE	0~15
CONTROL	I²C BUS CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, VCO ADJ, RF-AGC		
CONTENT	NO SIGNAL SIGNAL (400HZ 100% MODULATION)		
INPUT CONDITION	AC 120V, RF INPUT		
OUTPUT	IC 3001 39 PIN		
ADJUSTMENT PROCEDURE	1) SET THE SOUND VOLUME CONTROL MORE THAN 1. 2) ADJUST BUS DATA OF **M01** UNTIL THE VOLTAGE OF 39 PIN BECOME AS SPECIFIED BELOW.		
	[CHECKING SPEC] 490 ± 10mVrms (CHECKING SPEC :490 ± 20mVrms)		

ADJUSTMENT ITEM	MTS+VCO ADJUSTMENT		
ADJUSTMENT POSITION	M02	STEP RANGE	0~63
CONTROL	I²C BUS CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, VCO ADJ, RF-AGC		
CONTENT	SIGNAL WITHOUT NOISE (SIGNAL WITHOUT SOUND MODULATION)		
INPUT CONDITION	AC 120V		
OUTPUT	IC 3001 39 PIN		
ADJUSTMENT PROCEDURE	1) CONNECT 100 µ F ELECTROLLYTIC CAPACITOR BETWEEN C3005 (-ve)-GND 2) ADJUST THE BUS DATA **M02** UNTIL THE OUTPUT FREQUENCY OF 39 PIN BECOME AS SPECIFIED BELOW. **NOTE: TO MINIMIZE THE PRODUCTION TIME, ITEM 1) CAN IGNORE. IF ITEM 2) CAN'T BE ADJUST, THEN ITEM 1) IS REQUIRE.**		
	[CHECKING SPEC] 62.94 ± 0.75kHz (CHECKING SPEC : 62.94 ± 1.20kHz)		

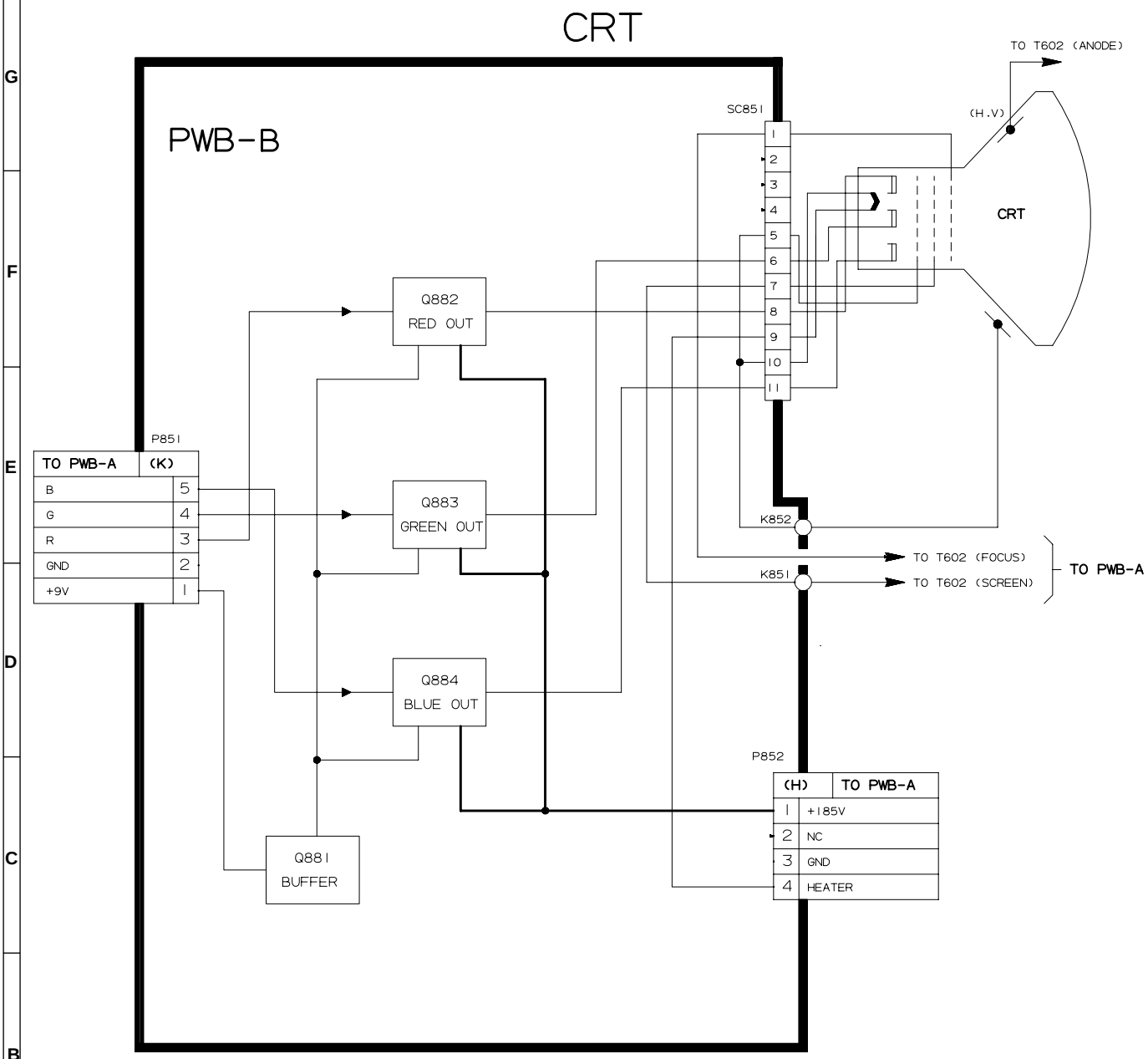
ADJUSTMENT ITEM	FILTER ADJUSTMENT		
ADJUSTMENT POSITION	M03	STEP RANGE	0~63
CONTROL	I^2C BUS CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, VCO ADJ, RF-AGC, MS-LEVEL, MTS-VCO		
CONTENT	SINE WAVE (9.4kHz, 600mVrms)		
INPUT CONDITION	PIN 14 (FROM C3005 - TERMINAL)		
OUTPUT	CONFIRMBY CRT SCREEN		
ADJUSTMENT PROCEDURE	1) ADJUST **M03** DATA UNITILL **OK** DISPLAY ON SCREEN ADJUST THE BUS DATA IN CENTRE OF THE RANGE.		
	[CHECKING SPEC] REFER TO ABOVE (CHECKING SPEC : ± 2 STEP TO CENTRE)		

ADJUSTMENT ITEM	SEPARTION ADJUSTMENT		
ADJUSTMENT POSITION	M04, M05	STEP RANGE	0~63
CONTROL	I^2C BUS CONTROL		
PRE-ADJUST REQUIREMENT	OPTION SET UP, BUS SET UP, VCO ADJ, RF-AGC, MS-LEVEL, MTS-VCO, FILTER		
CONTENT	STEREO SIGNAL SIGNAL 1,: MODULATION 30%, L-CH ONLY, NR-ON, 300Hz SIGNAL 2,: MODULATION 30%, L-CH ONLY, NR-ON, 3kHz		
INPUT CONDITION	RF INPUT		
OUTPUT	IC 3001 39 PIN		
ADJUSTMENT PROCEDURE	1) INPUT SIGNAL 1, ADJUST BUS DATA OF M04 UNIT THE OF 39 PIN BECOME MINIMUM LEVEL. 2) INPUT SIGNAL 1, ADJUST BUS DATA OF M04 UNIT THE AC VOLTAGE OF 39 PIN BECOME MINIMUM LEVEL. 3) REPEAT STEP 1) AND 2). SET THE SOUND VOLUME TO MAXIMUM THEN MAKE SURE THE READING FROM THE SPEAKER TERMINAL MUST BE OVER THE SPEC AS SPECIFIED BELOW.		
	[CHECKING SPEC] OVER 25 dB (CHECKING SPEC : OVER 20 dB)		

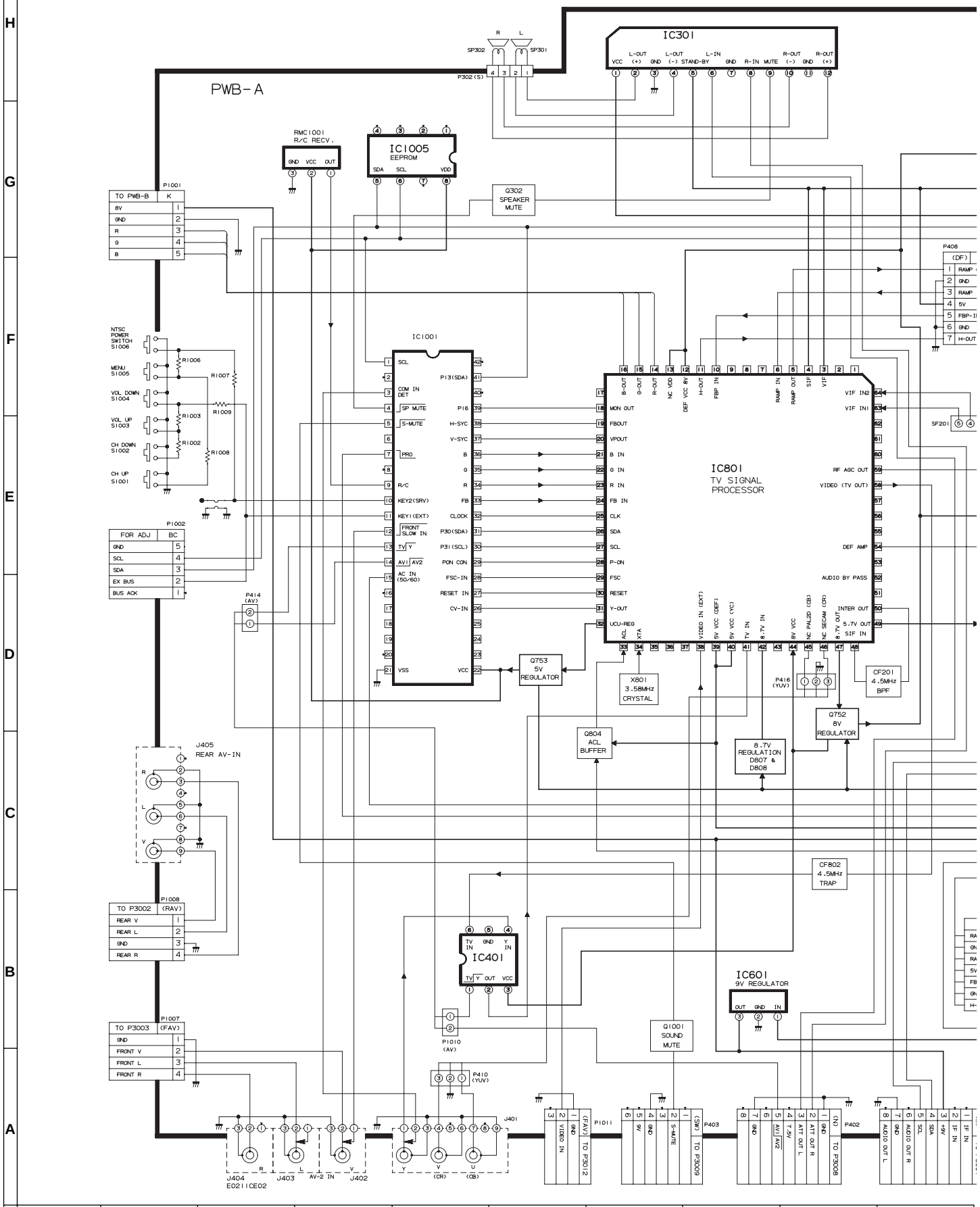
CHASSIS LAYOUT

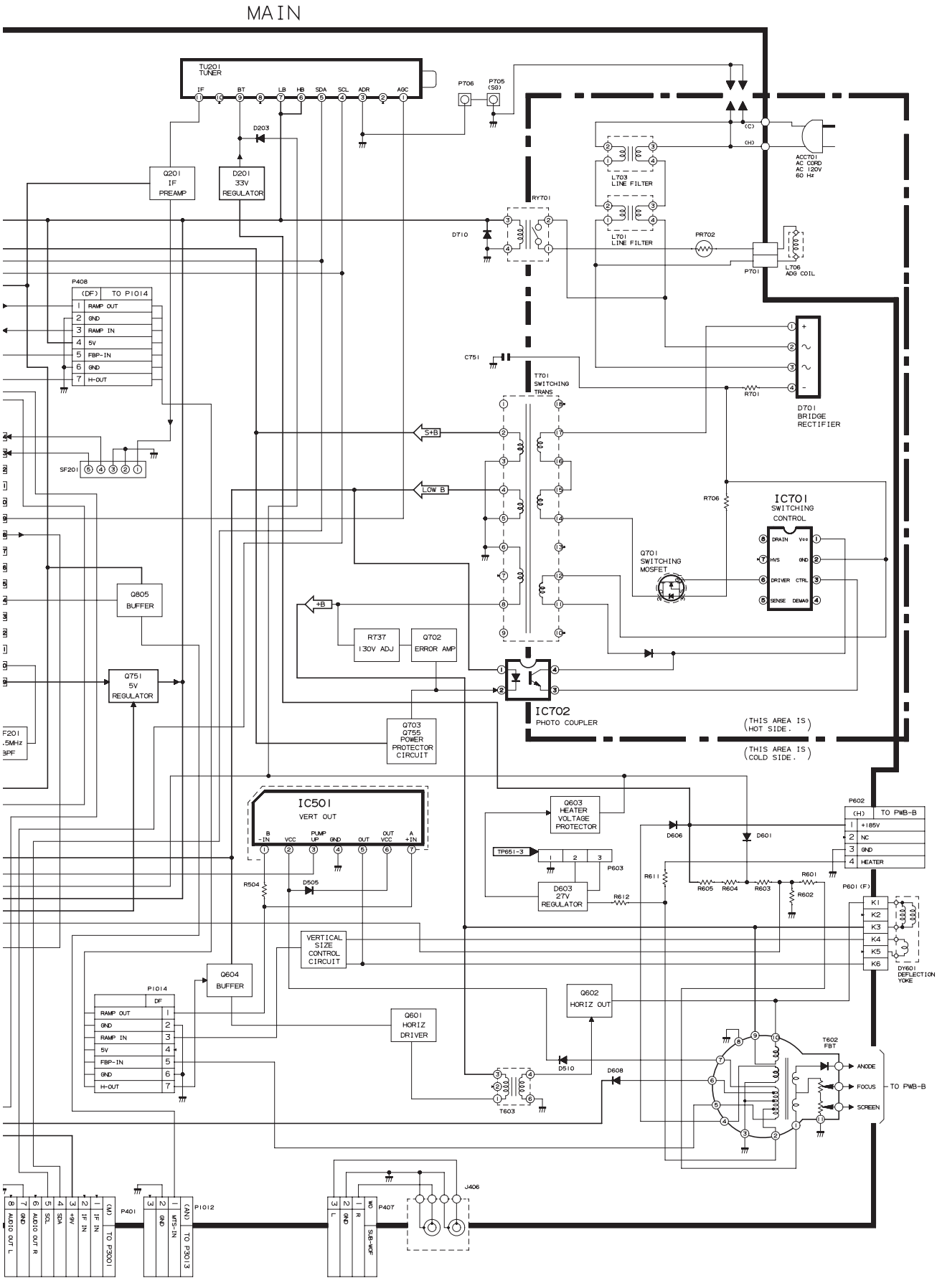


BLOCK DIAGRAM-1



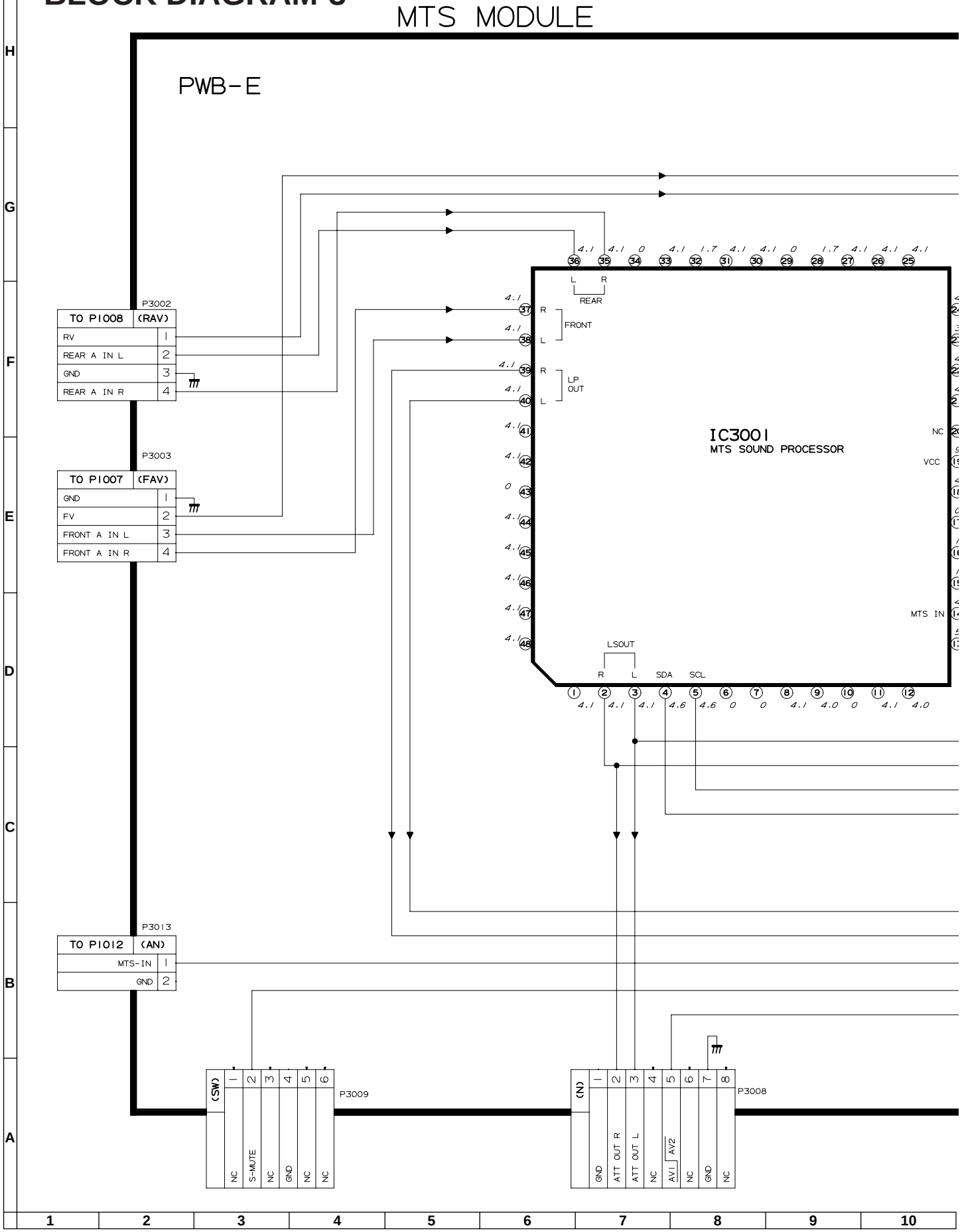
BLOCK DIAGRAM-2

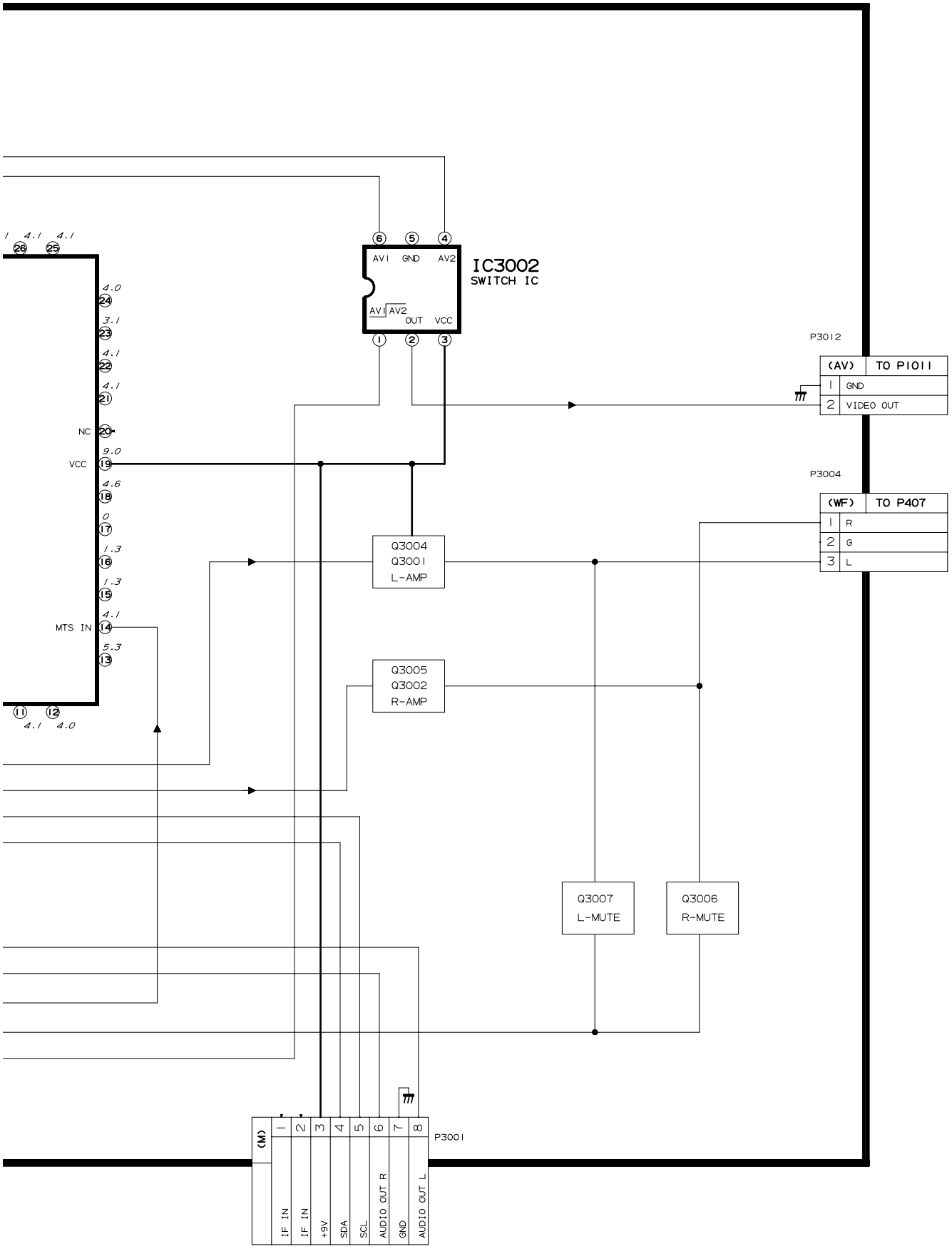




10	11	12	13	14	15	16	17	18	19

BLOCK DIAGRAM-3





10	11	12	13	14	15	16	17	18	19

DESCRIPTION OF SCHEMATIC DIAGRAM

NOTES:

1. *The unit of resistance "ohm" is omitted. (K=kΩ=1000Ω, M=MΩ)*
2. *All resistors are 1/16 watt, unless otherwise noted.*
3. *All capacitors are μ F, unless otherwise noted. (P=pF=μμF)*
4. *(G) indicates ±2% tolerance may be used.*
5. *⏚ indicates line isolated ground.*

VOLTAGE MEASUREMENT CONDITIONS:

1. *All DC voltages are measured with DVM connected between points indicated and chassis ground, line voltage set at 120V AC and all controls set for normal picture unless otherwise indicated.*
2. *All voltages measured with 1000μ V B & W or Color signal.*

WAVEFORM MEASUREMENT CONDITIONS:

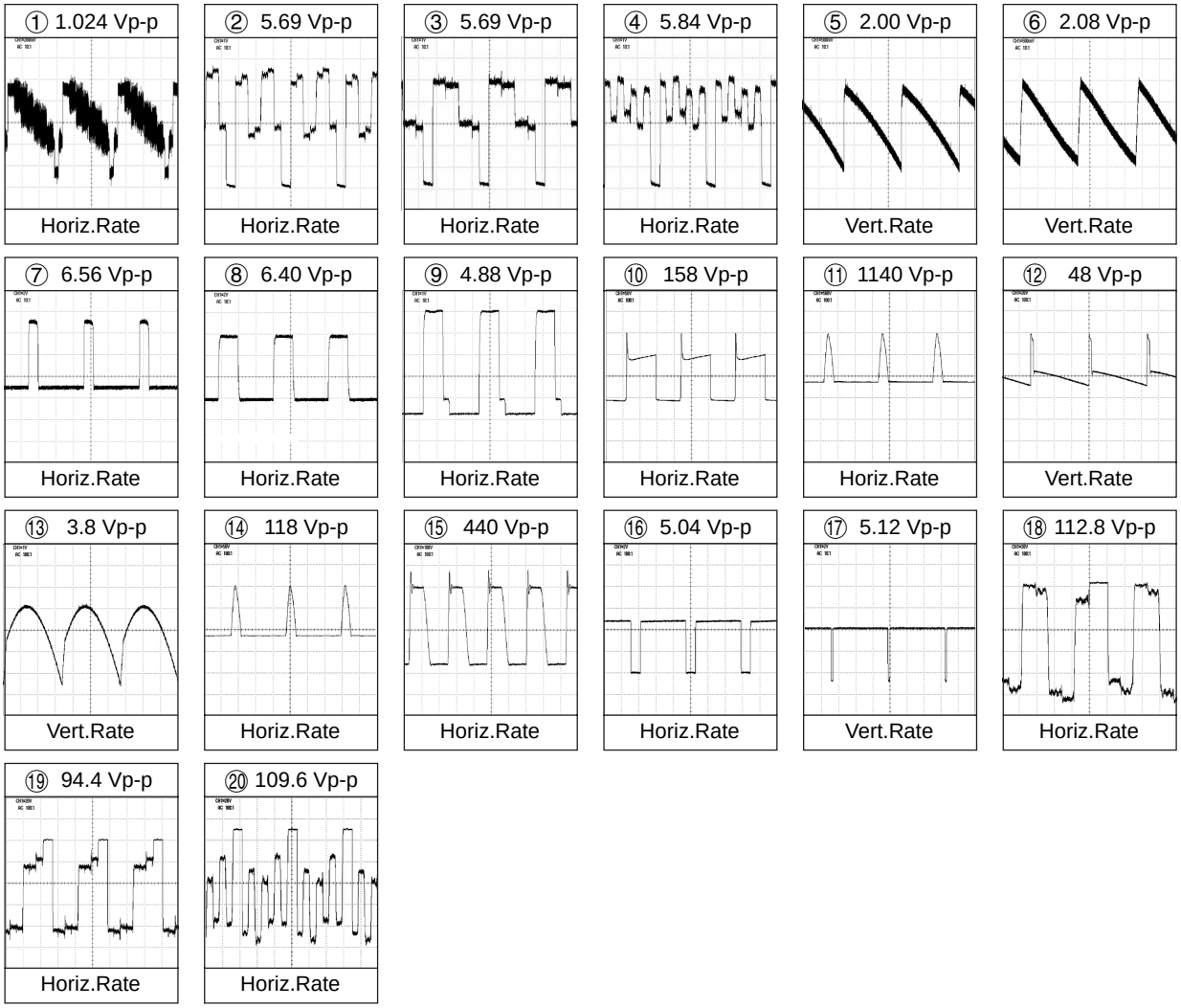
1. *Photographs taken on a standard gated color bar signal, the tint setting adjusted for proper color. The wave shapes at the red, green and blue cathodes of the picture tube depend on the tint, color level and picture control.*
2. *◯▶ indicates waveform check points (See chart, waveforms are measured from point indicated to chassis ground.)*

⚠ AND SHADED (▭) COMPONENTS = SAFETY RELATED PARTS.
▲ MARK= X-RAY RELATED PARTS.

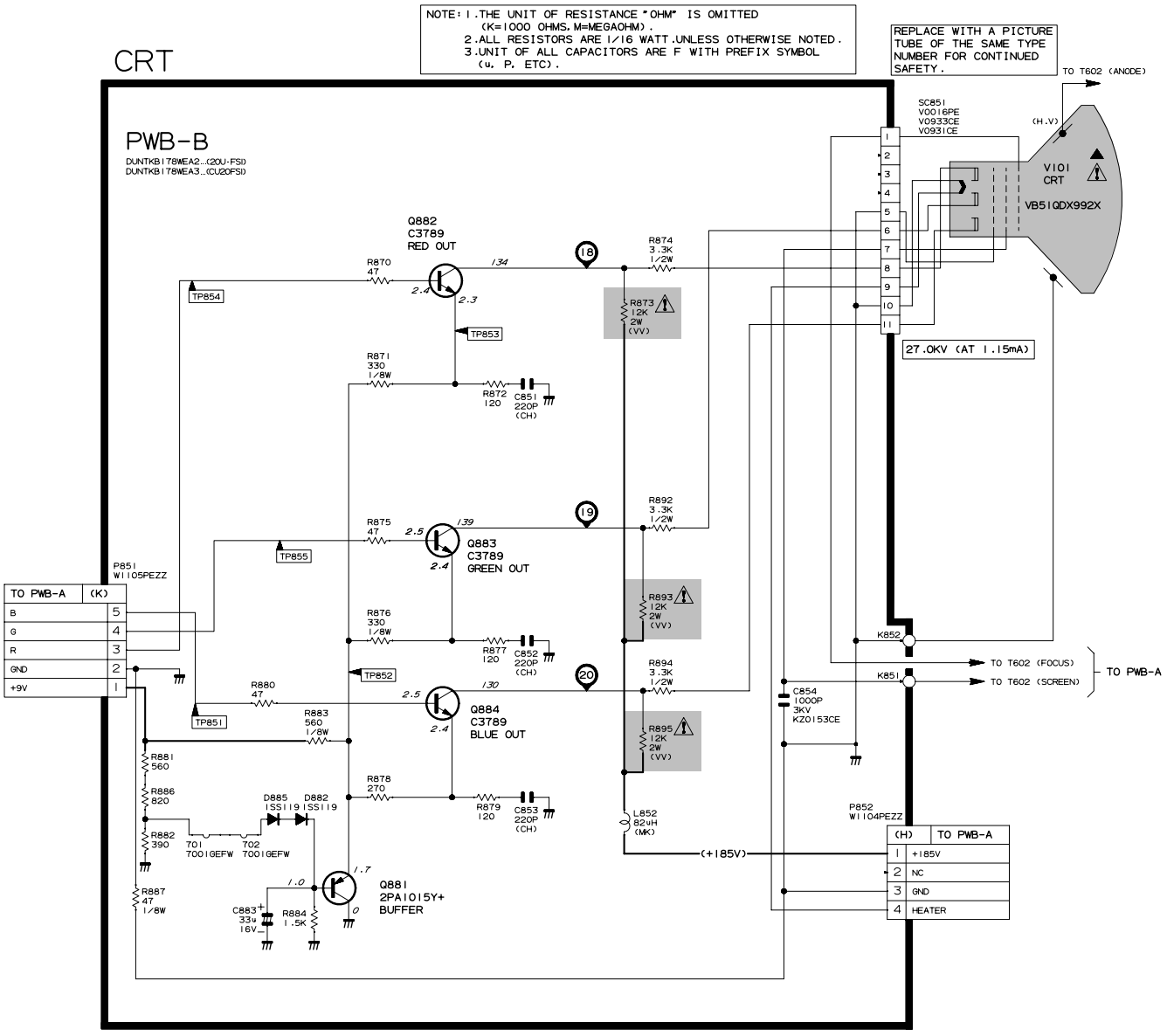
DRGANNES MARQUES ⚠ ET HACHRES (▭): PIECES RELATIVES A LA SECURITE.
MARQUE ▲ : PIECS RELATIVE AUX RAYONS X.

This circuit diagram is a standard one, printed circuits may be subject to change for product improvement without prior notice.

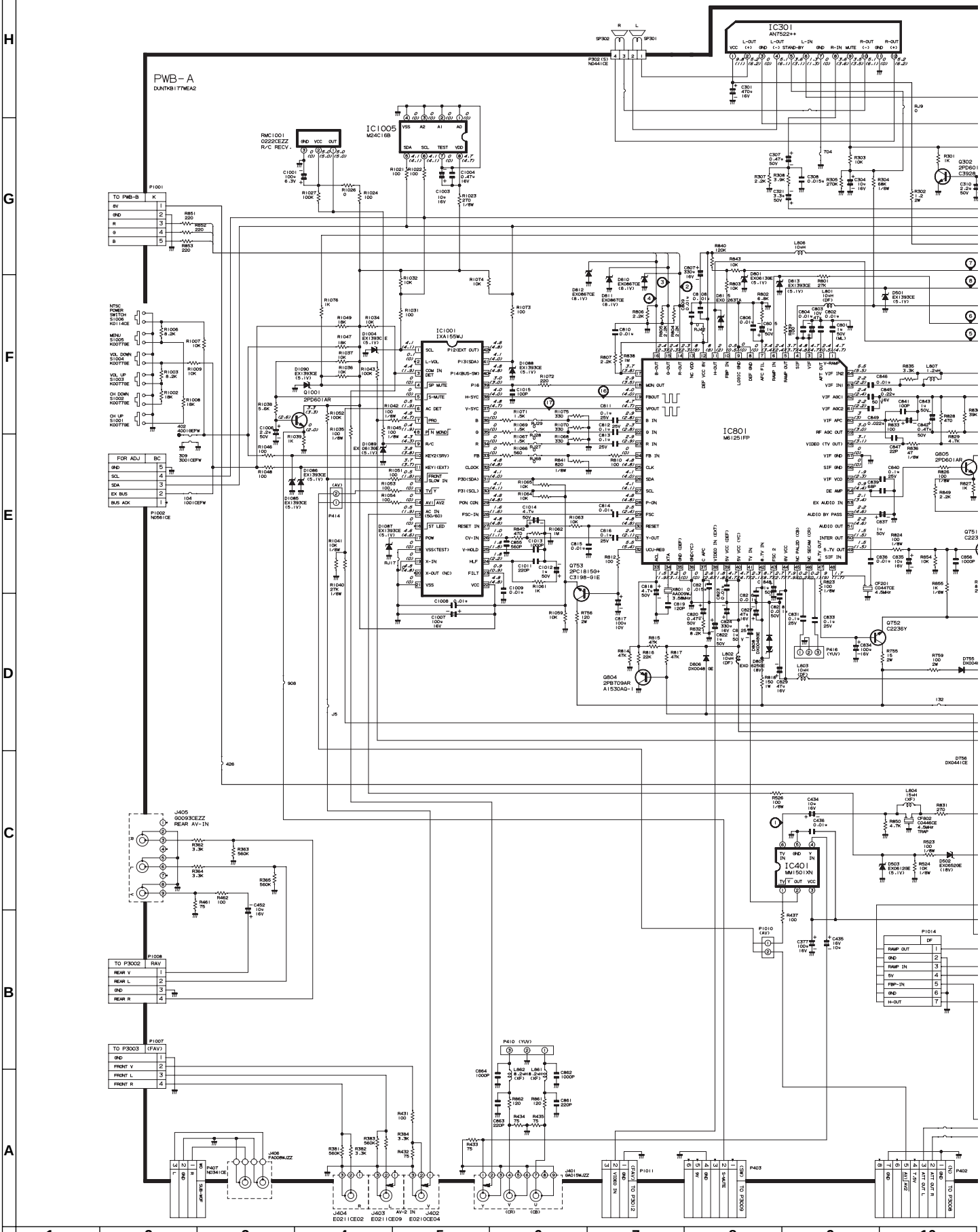
WAVEFORMS

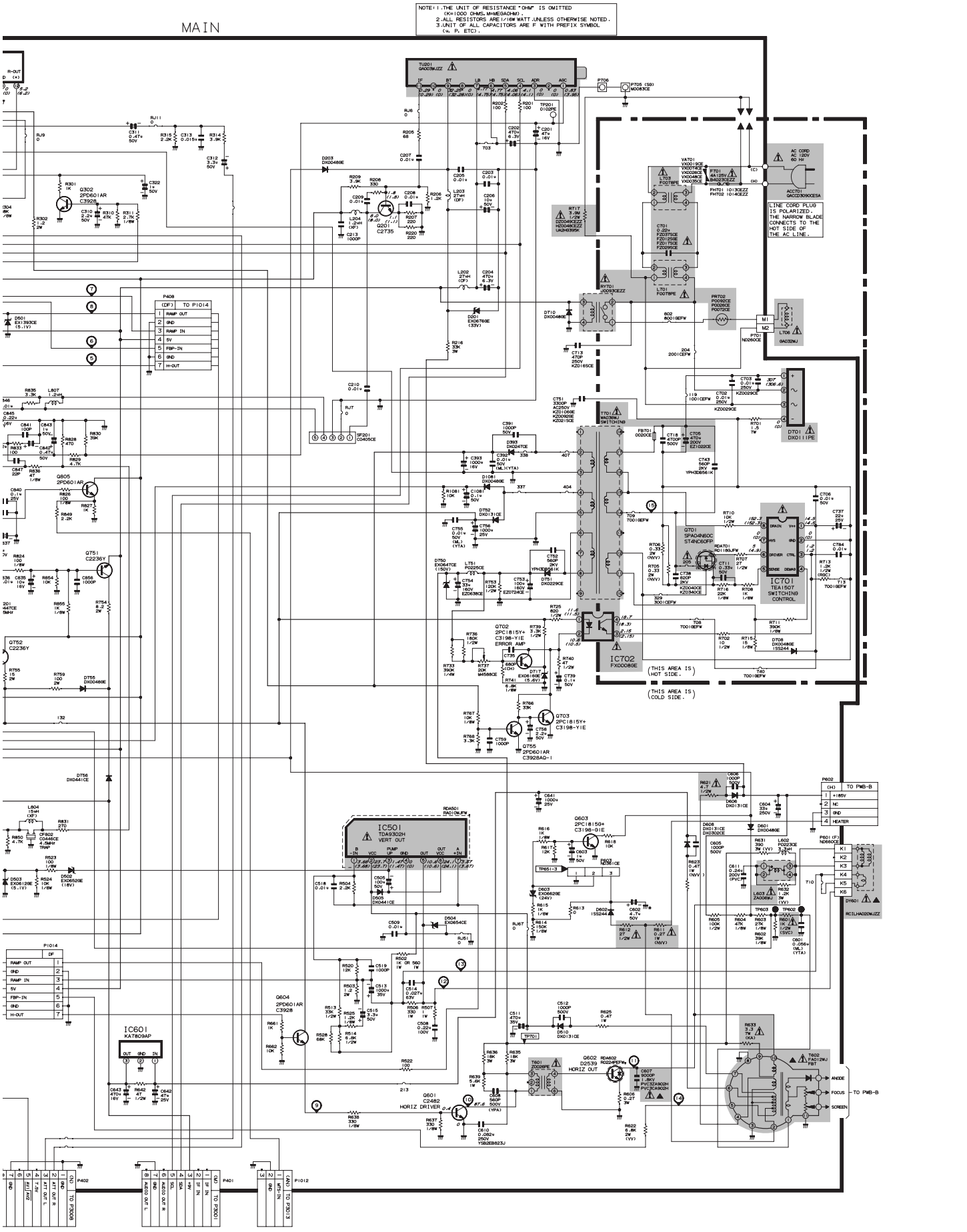


SCHEMATIC DIAGRAM: CRT Unit



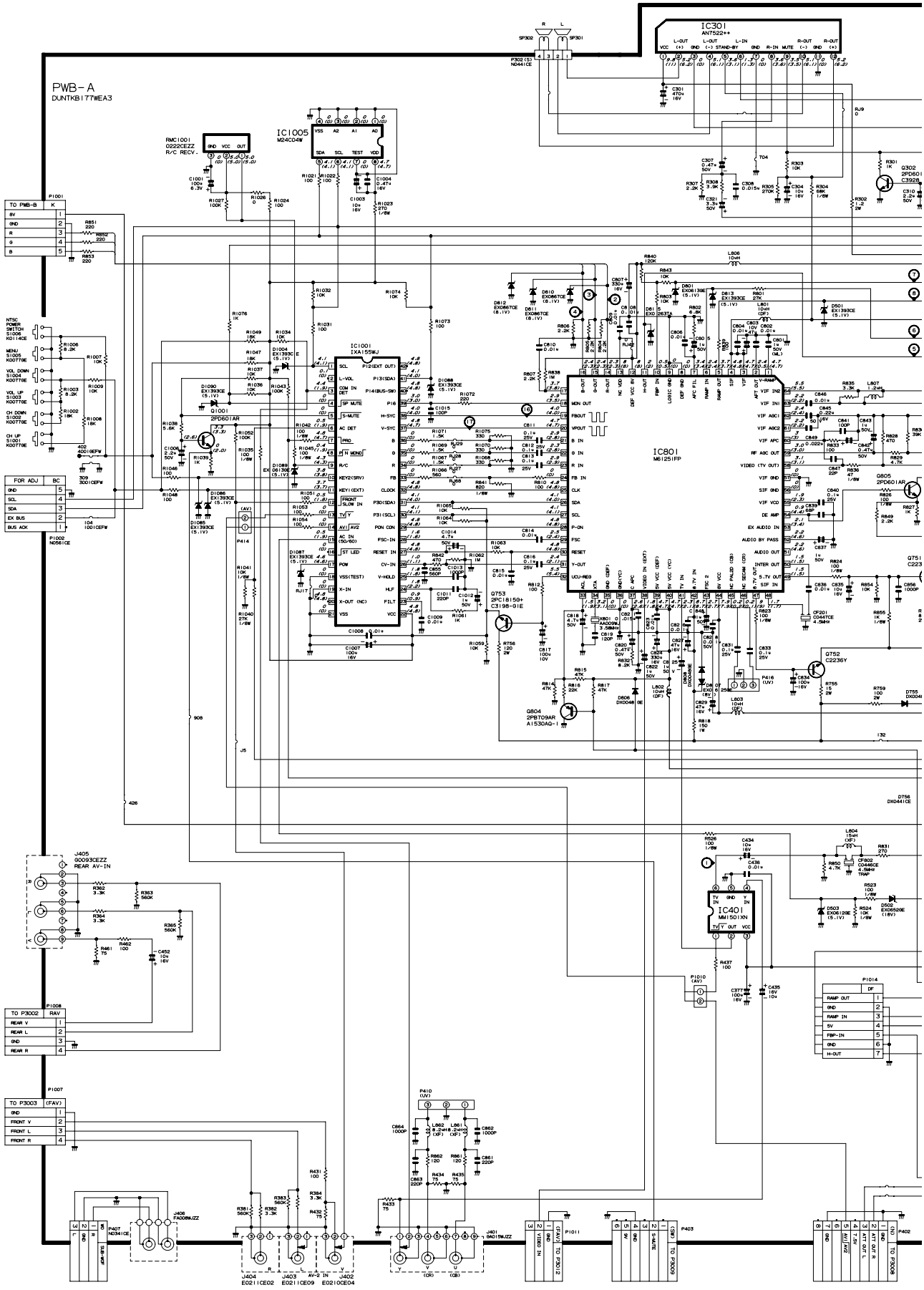
MODEL 20U-FS1 SCHEMATIC DIAGRAM: MAIN Unit

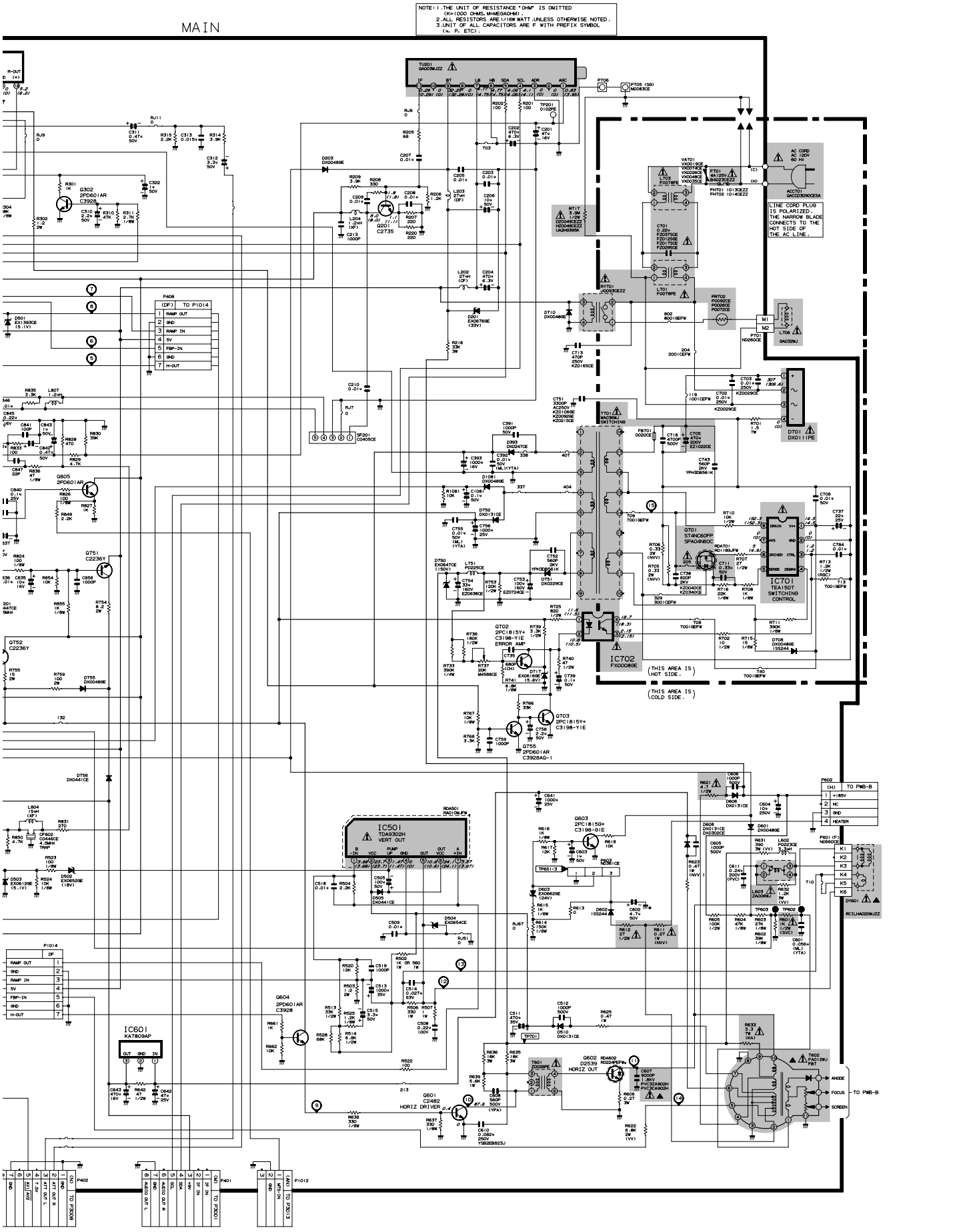




10	11	12	13	14	15	16	17	18	19

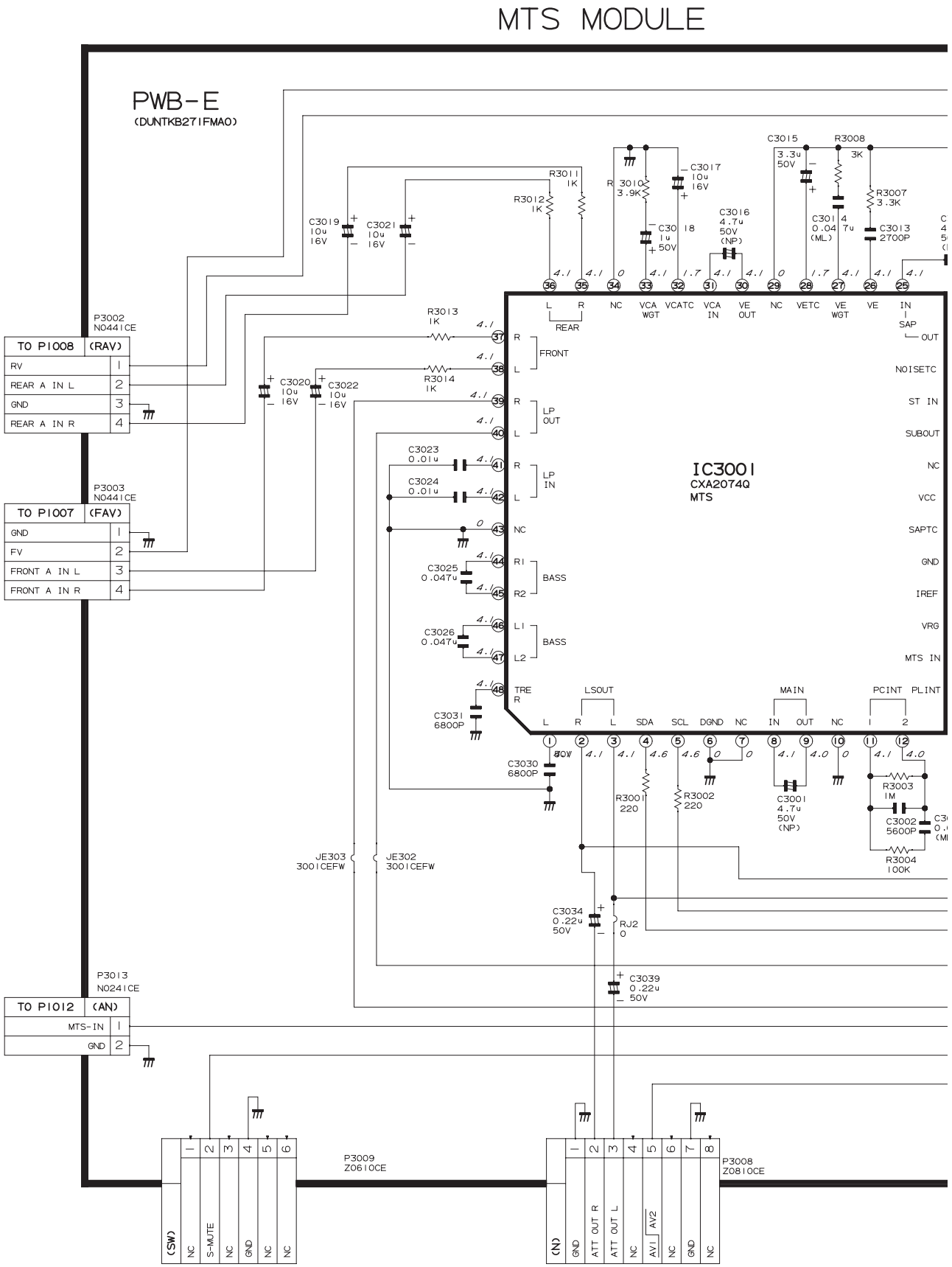
MODEL CU20FS1 SCHEMATIC DIAGRAM: MAIN Unit



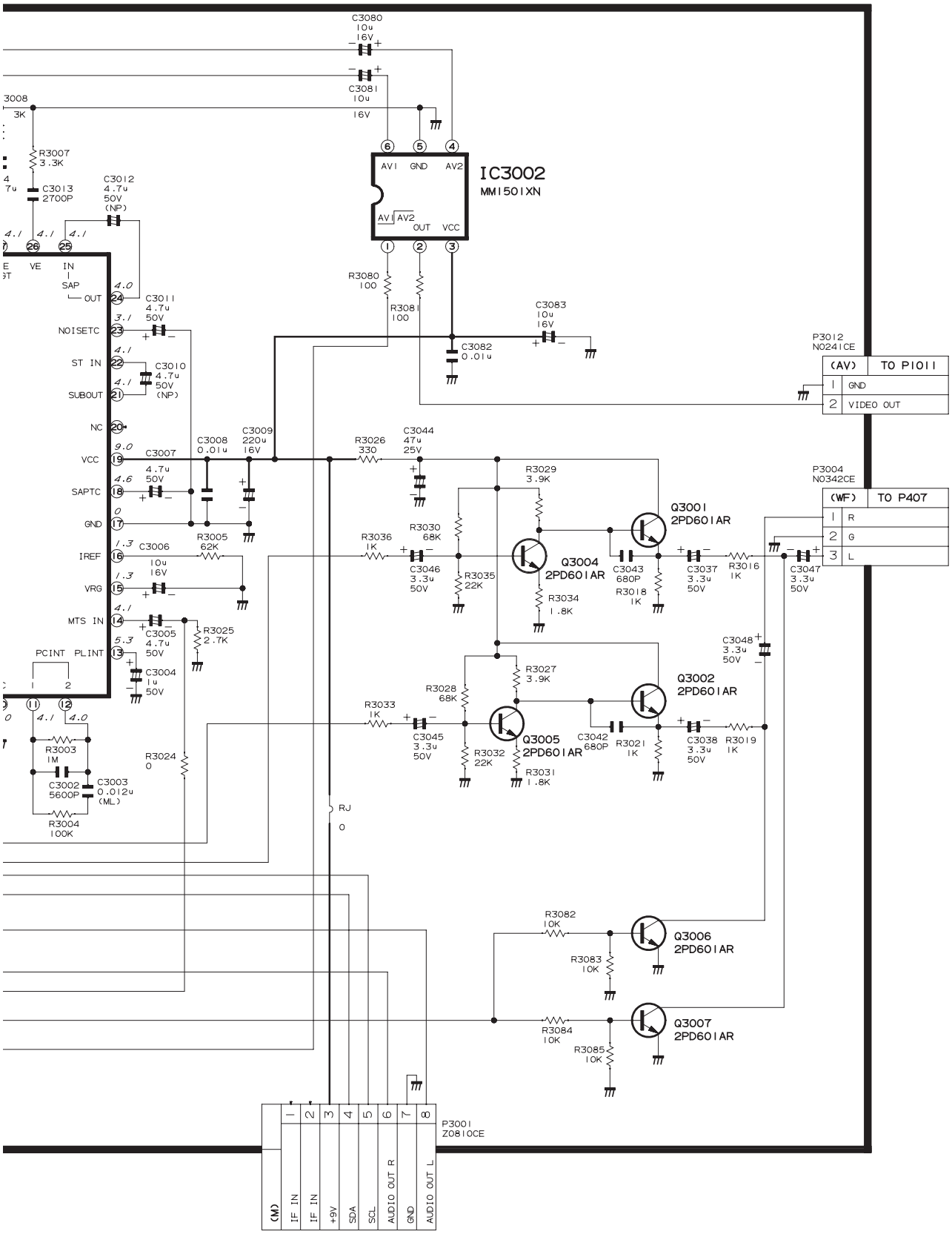


10	11	12	13	14	15	16	17	18	19

SCHEMATIC DIAGRAM: MTS MODULE Unit

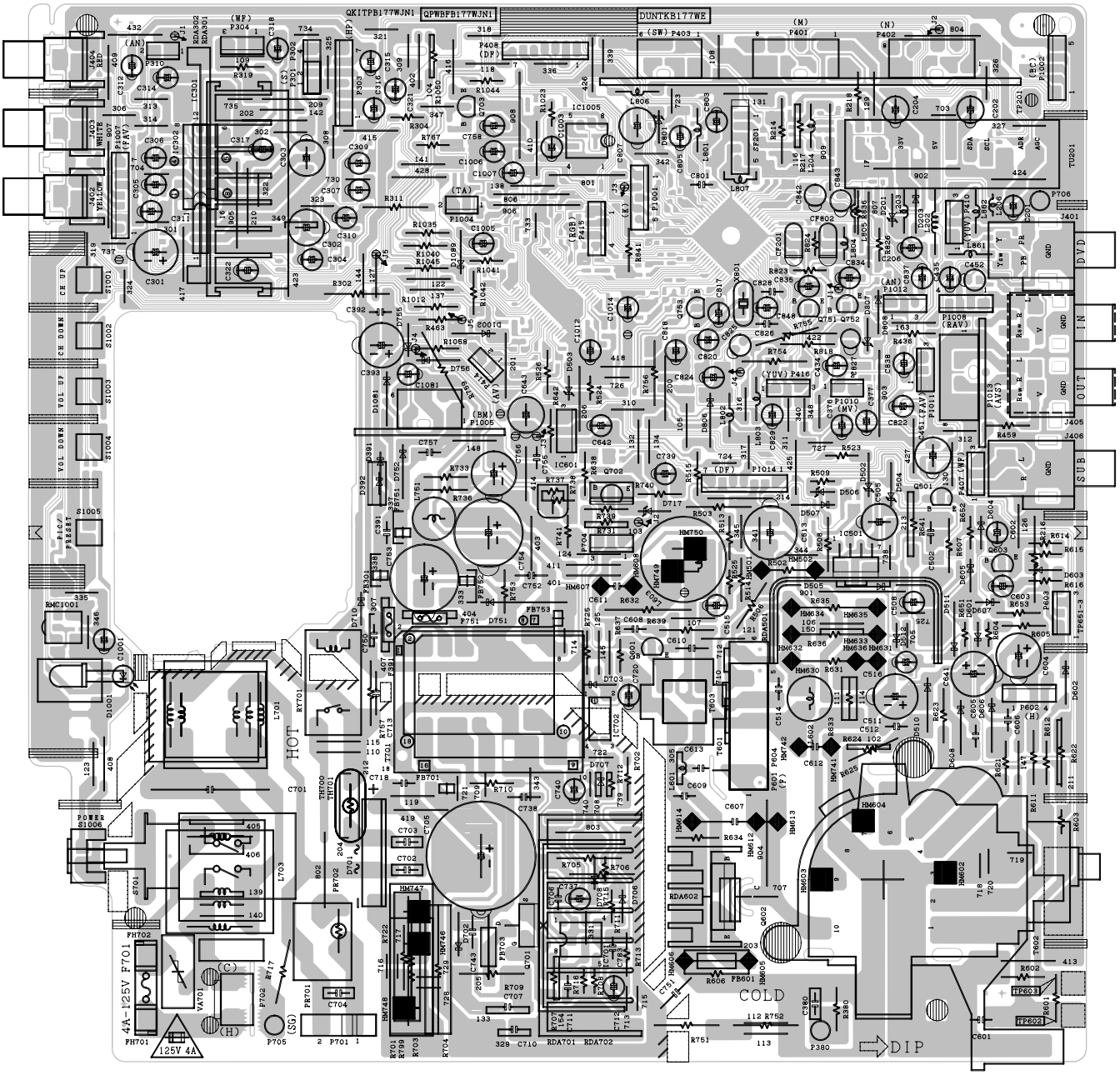


NOTE: 1.THE UNIT OF RESISTANCE "OHM" IS OMITTED
(K=1000 OHMS. M=MEGAOHM).
2.ALL RESISTORS ARE 1/16 WATT.UNLESS OTHERWISE NOTED.
3.UNIT OF ALL CAPACITORS ARE F WITH PREFIX SYMBOL
(u, P, ETC).

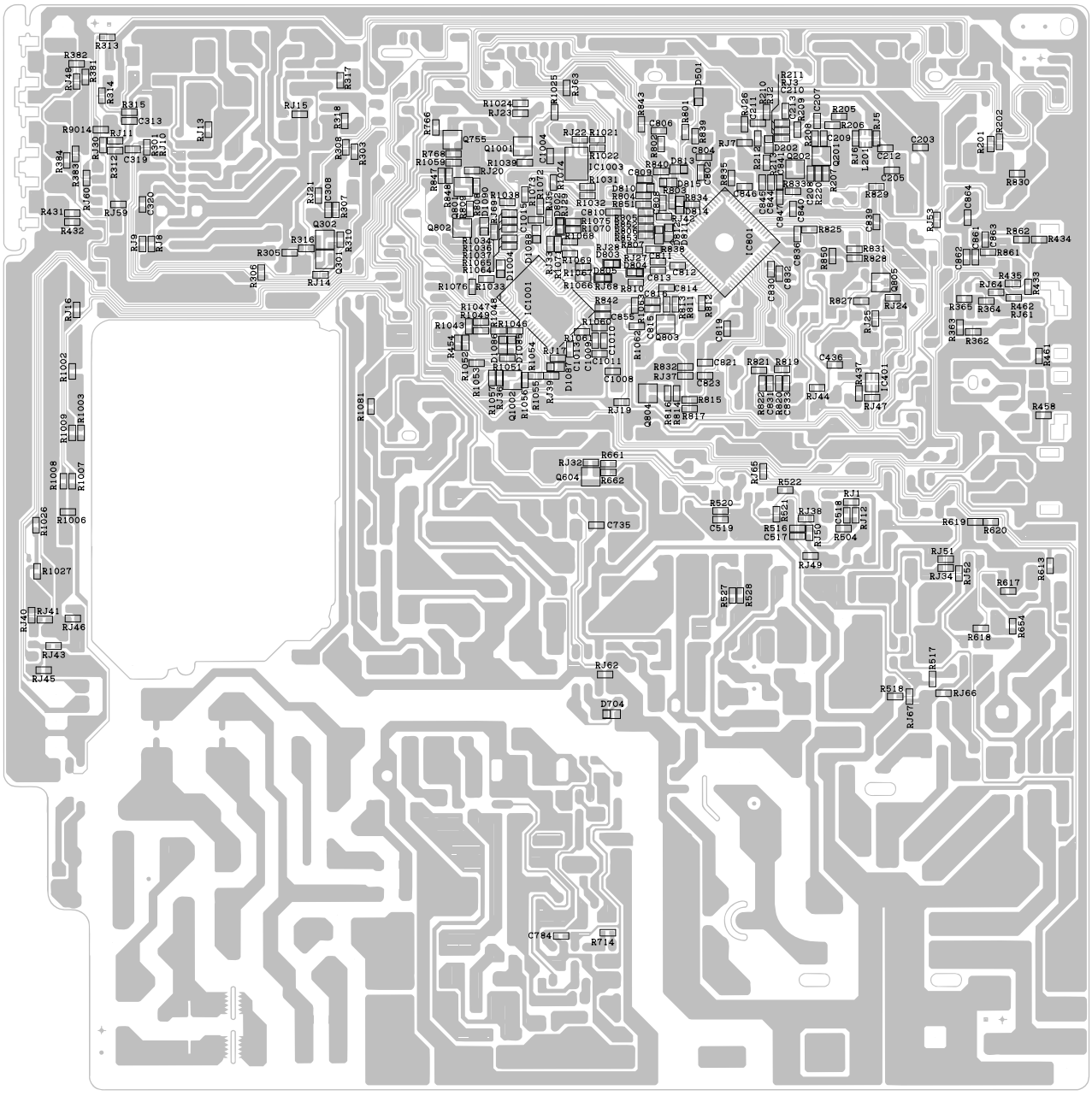


10	11	12	13	14	15	16	17	18	19

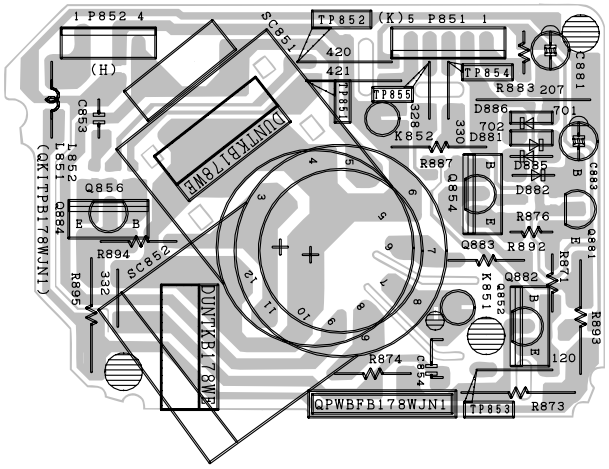
PRINTED WIRING BOARD ASSEMBLIES



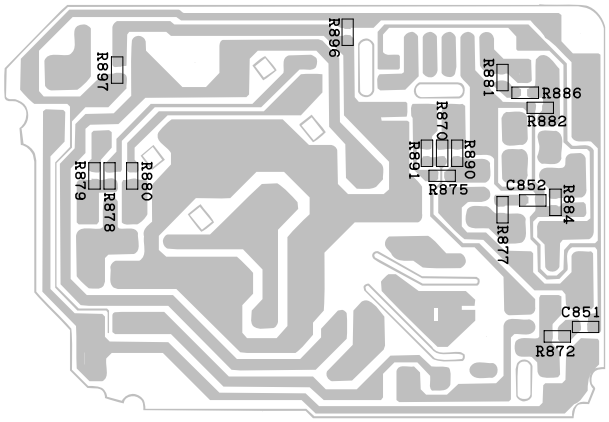
PWB-A: MAIN Unit (Wiring Side)



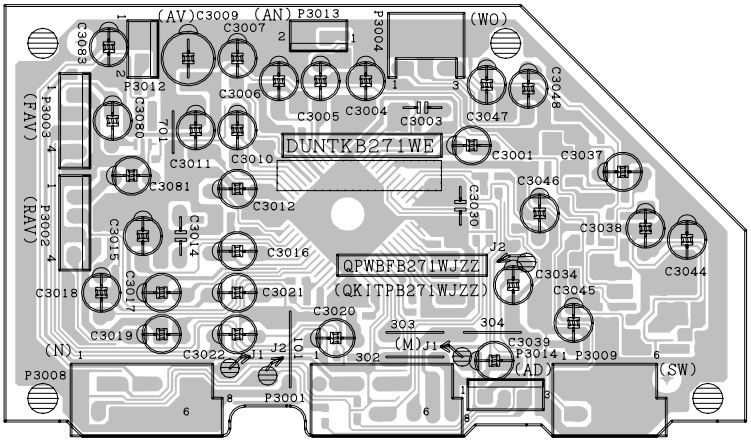
PWB-A: MAIN Unit (Chip Parts Side)



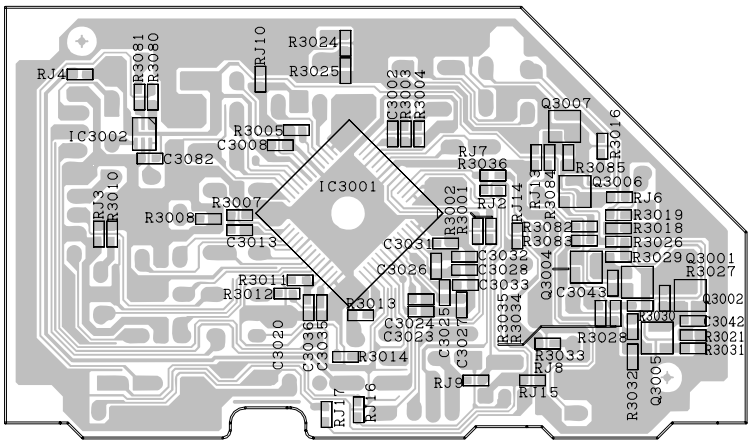
PWB-B: CRT Unit (Wiring Side)



PWB-B: CRT Unit (Chip Parts Side)



PWB-E: MTS MODULE Unit (Wiring Side)



PWB-E: MTS MODULE Unit (Chip Parts Side)

1	2	3	4	5	6

PARTS LIST

PARTS REPLACEMENT

Replacement parts which have these special safety characteristics identified in this manual ; electrical components having such features are identified by ⚠ and shaded areas in the Replacement Parts Lists and Schematic Diagrams. The use of a substitute replacement part which does no have the same safety characteristic as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

in **USA**: Contact your nearest SHARP Parts Distributor to order. For location of SHARP Parts Distributor, Please call Toll-Free; 1-800-BE-SHARP

★ MARK: SPARE PARTS-DELIVERY SECTION

▲ MARK: X-RAY RELATED PARTS

Ref. No.	Part No.	★	Description	Code

PICTURE TUBE

▲⚠	V101	VB51QDX992X1E	R	Picture Tube (With DY601)	CG
⚠	L706	RCiLGA032WJZZ	R	Degaussing Coil	AR
		LHLDW0003PEKZ	R	Wire Holder, x4	AB
		LHLDW0016PEKZ	R	Wire Holder, x2	AB
		LHLDW1003PEZZ	R	Wire Holder, x2	AA
		LHLDW1075PEKZ	R	Wire Holder	AC
		PMAGF3046CEZZ	J	Purity Magnet, x3	AF
		PSPAG0003PEZZ	R	Spacer, x3	AD
		QEARCA012WJZZ	R	Grounding Strap	AG

PRINTED WIRING BOARD ASSEMBLIES
(NOT REPLACEMENT ITEM)

20U-FS1

PWB-A	DUNTKB177WEA2	– MAIN Unit	—
PWB-B	DUNTKB178WEA2	– CRT Unit	—
PWB-E	DUNTKB271FMA0	– MTS MODULE Unit	—

CU20FS1

PWB-A	DUNTKB177WEA3	– MAIN Unit	—
PWB-B	DUNTKB178WEA3	– CRT Unit	—
PWB-E	DUNTKB271FMA0	– MTS MODULE Unit	—

LISTE DES PIECES

CHANGE DES PIECES

Les pi`eces de rechange qui pr élelesentent ces caract éleristiques sp éleciales de s élecurit éle, sont identifi élees dans ce manuel : les pi`eces élelectriques qui pr élesentent ces particularit éles, sont rep éler élee par la marque ⚠ et sont hachur élees dans les listes de pi`eces et dans les diagrammes sch élematiques.
La substitution d'une pi`ece de rechange par une autre qui ne pr éLesente pas les m éoemes caract éLeristiques de s élecurit éle que la pi`ece recommand élee parl'usine et dans ce manuel de service, peut provoquer une éLelectrocution, un incendie ou toutautre sinistre.

"COMMENT COMMANDER LES PIECES DE RECHANGE"

Pour que votre commande soit rapidement et correctement remplie, veuillez fournir les renseignements suivants.

1. NUMERO DU MODELE
2. NO. DE REF
3. NO. DE PIECE
4. DESCRIPTION

in **CANADA**: Contact SHARP Electronics of Canada Limited
Phone (416) 890-2100

★ MARQUE: SECTION LIVRAISON DES PIECES DERECHANGE

▲ MARQUE: PIECES RELATIVE AUX RAYONS X

Ref. No.	Part No.	★	Description	Code

PWB-A: DUNTKB177WEA2(20U-FS1)
PWB-A: DUNTKA177WEA3(CU20FS1)
MAIN UNIT

TUNER

NOTE: THE PARTS HERES SHOWN ARE SUPPLIED AS AN ASSEMBLY BUT NOT INDEPENDENTLY.

⚠	TU201	RTUNQA003WJZZ	J	Tuner	AY

INTEGRATED CIRCUITS

	IC301	VHiAN7522++-1	R	I.C.	AL
	IC401	VHiMM1501XN-1Y	R	MM1501XNRE	AE
⚠	IC501	VHiTDA9302H-1	J	TDA9302H	AH
	IC601	VHiKA7809AP-1	J	KA7809API	AE
⚠	IC701	VHiTEA1507/-1	J	TEA1507P/N1	AL
⚠	IC702	RH-FX0008GEZZ	J	PC123FY8	AE
	IC801	VHiM61251FP1EQ	R	I.C.	AX
	IC1001	RH-iXA155WJN2	R	I.C.	AV
	IC1005	VHiM24C16B/-1	J	M24C16-BN6 (20U-FS1)	AG
	IC1005	VHiM24C04W/-1	J	M24C04-WBN6 (CU20FS1)	AG

TRANSISTORS

	Q201	VS2SC2735//1E	J	2SC2735	AC
	Q302	VS2PD601AR/-1	J	2PD601AR	AB
		or			
		VS2SC3928AR-1			
	Q601	VS2SC2482//-1	J	2SC2482	AD
	Q602	VS2SD2539//1E	J	2SD2539	AP
	Q603	VS2PC1815G+-1+	R	2PC1815G	AC
		or			
		VS2SC3198-G1E			
	Q604	VS2PD601AR/-1	J	2PD601AR	AB
		or			
		VS2SC3928AR-1			
⚠	Q701	VSSPA04N60C-1	R	SPA04N60C	AK
		or			
		VSST4NC60FP1E			
	Q702	VS2PC1815Y+-1+	R	2PC1815Y	AC
		or			
		VS2SC3198-Y1E			
	Q703	VS2PC1815Y+-1+	R	2PC1815Y	AC
		or			
		VS2SC3198-Y1E			
	Q751	VS2SC2236Y/-1	J	2SC2236Y	AD
	Q752	VS2SC2236Y/-1	J	2SC2236Y	AD

PWB-A: DUNTKB177WEA2(20U-FS1)
PWB-A: DUNTKB177WEA3(CU20FS1)
MAIN UNIT (Continued)

Ref. No.	Part No.	★	Description	Code
Q753	VS2PC1815G+-1+ or VS2SC3198-G1E	R	2PC1815G	AC
Q755	VS2PD601AR/-1 or VS2SC3928AQ-1	J	2PD601AR	AB
Q804	VS2PB709AR/-1 or VS2SA1530AQ-1	J	2PB709AR	AB
Q805	VS2PD601AR/-1	J	2PD601AR	AB
Q1001	VS2PD601AR/-1	J	2PD601AR	AB

DIODES

D201	RH-EX0676GEZZ	J	Zener Diode, 33V	AA
D203	RH-DX0048GEZZ	J	Diode	AA
D393	RH-DX0247CEZZ	J	Diode	AE
D501	RH-EX1393CEZZ	J	Zener Diode, 5.1V	AB
D502	RH-EX0652GEZZ	J	Zener Diode, 18V	AB
D503	RH-EX0612GEZZ	J	Zener Diode, 5.1V	AA
D504	RH-EX0654CEZZ	J	Zener Diode	AD
D505	RH-DX0441CEZZ	J	Diode	AC
D510	RH-DX0131CEZZ	J	Diode	AC
D601	RH-DX0048GEZZ	J	Diode	AA
D602	VHD1SS244//-1	J	Diode	AB
D603	RH-EX0662GEZZ	J	Zener Diode, 24V	AB
D606	RH-DX0131CEZZ	J	Diode	AC
D608	RH-DX0131CEZZ or RH-DX0302CEZZ	J	Diode	AC
⚠ D701	RH-DX0111PEZZ	R	Diode	AG
D708	RH-DX0048GEZZ or VHD1SS244//-1	J	Diode	AA
D710	RH-DX0048GEZZ	J	Diode	AA
D717	RH-EX0616GEZZ	J	Zener Diode, 5.6V	AA
D750	RH-EX0647CEZZ	J	Zener Diode, 150V	AF
D751	RH-DX0229CEZZ	J	Diode	AF
D752	RH-DX0131CEZZ	J	Diode	AC
D755	RH-DX0048GEZZ	J	Diode	AA
D756	RH-DX0441CEZZ	J	Diode	AC
D801	RH-EX0613GEZZ	J	Zener Diode, 5.1V	AA
D806	RH-DX0048GEZZ	J	Diode	AA
D807	RH-EX0625GEZZ	J	Zener Diode, 8V	AA
D808	RH-DX0048GEZZ	J	Diode	AA
D810	RH-EX0867CEZZ	J	Zener Diode, 8.1V	AC
D811	RH-EX0867CEZZ	J	Zener Diode, 8.1V	AC
D812	RH-EX0867CEZZ	J	Zener Diode, 8.1V	AC
D813	RH-EX1393CEZZ	J	Zener Diode, 5.1V	AB
D815	RH-EX0263TAZZ	J	Zener Diode	AB
D1004	RH-EX1393CEZZ	J	Zener Diode, 5.1V	AB
D1081	RH-DX0048GEZZ	J	Diode	AA
D1085	RH-EX1393CEZZ	J	Zener Diode, 5.1V	AB
D1086	RH-EX1393CEZZ	J	Zener Diode, 5.1V	AB
D1087	RH-EX1393CEZZ	J	Zener Diode, 5.1V	AB
D1088	RH-EX1393CEZZ	J	Zener Diode, 5.1V	AB
D1089	RH-EX0613GEZZ	J	Zener Diode, 5.1V	AA
D1090	RH-EX1393CEZZ	J	Zener Diode, 5.1V	AB
VA701	RH-VX0019CEZZ or RH-VX0074CEZZ or RH-VX0026CEZZ or RH-VX0048CEZZ or RH-VX0035CEZZ	J	Varistor	AC

PACKAGED CIRCUITS

⚠ PR702	RMPTP0092CEZZ or RMPTP0026CEZZ or RMPTP0072CEZZ	J	Packaged Circuit	AH
X801	RCRSAA009WJZZ	J	Crystal	AF

FILTERS AND COILS

CF201	RFiLC0447CEZZ	J	Ceramic Filter	AD
CF802	RFiLC0446CEZZ	J	Ceramic Filter	AD
SF201	RFiLC0405CEZZ	J	SAW Filter	AH
L202	VP-CF270K0000	J	Peaking 27µH	AB
L203	VP-DF270K0000	J	Peaking 27µH	AB
L204	VP-XF1R2K0000	J	Peaking 1.2µH	AB
L602	RCiLP0223CEZZ	J	Coil	AE
⚠ L603	RCiLZA006WJZZ	J	Coil	AH
⚠ L701	RCiLF0078PEZZ	R	Coil	AF
⚠ L703	RCiLF0078PEZZ	R	Coil	AF
L751	RCiLP0225CEZZ	J	Coil	AF
L801	VP-DF100K0000	J	Peaking 10µH	AB
L802	VP-DF100K0000	J	Peaking 10µH	AB
L803	VP-DF100K0000	J	Peaking 10µH	AB
L804	VP-XF150K0000	J	Peaking 15µH	AB
L806	VP-DF100K0000	J	Peaking 10µH	AB
L807	VP-XF1R2K0000	J	Peaking 1.2µH	AB
L861	VP-XF8R2K0000	J	Peaking 8.2µH	AB
L862	VP-XF8R2K0000	J	Peaking 8.2µH	AB

TRANSFORMERS

⚠ T601	RTRNZ0026PEZZ	R	Transformer	AH
▲⚠ T602	RTRNFA012WJZZ	R	H-Volt Transformer	BB
⚠ T701	RTRNWA036WJZZ	R	Transformer	AM

CONTROL

R737	RVR-M4588CEZZ+	R	20k(B) 130V Adj.	AC

CAPACITORS

[EL.··· Electrolytic, M-Poly.··· Metalized Polypro Film]

C201	VCEA0A1CW476M	J	47	16V	EL.	AB
C202	VCEA0A0JW477M	J	470	6.3V	EL.	AC
C203	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C204	VCEA0A0JW477M	J	470	6.3V	EL.	AC
C205	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C206	VCEA0A1HW106M	J	10	50V	EL.	AB
C207	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C208	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C209	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C210	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C211	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
C213	VCKYCY1HB102K	J	1000p	50V	Ceramic	AA
C301	VCEA0A1CW477M	J	470	16V	EL.	AC
C304	VCEA0A1CW106M	J	10	16V	EL.	AB
C307	VCEA0A1HW474M	J	0.47	50V	EL.	AB
C308	VCKYCY1HF153Z	J	0.015	50V	Ceramic	AB
C310	VCEA0A1HW225M	J	2.2	50V	EL.	AB
C311	VCEA0A1HW474M	J	0.47	50V	EL.	AB
C312	VCEA0A1HW335M	J	3.3	50V	EL.	AB
C313	VCKYCY1HF153Z	J	0.015	50V	Ceramic	AB
C321	VCEA0A1HW335M	J	3.3	50V	EL.	AB
C322	VCEA0A1HW105M	J	1	50V	EL.	AB
C377	VCEA0A1CW107M	J	100	16V	EL.	AC
C391	VCKYPA1HB102K	J	1000p	50V	Ceramic	AA
C392	VCQYTA1HM103J	J	0.01	50V	Mylar	AA
C393	VCEA0A1CW108M	J	1000	16V	EL.	AD
C434	VCEA0A1CW106M	J	10	16V	EL.	AB
C435	VCE9GA1CW106M	J	10	16V	EL. (N.P)	AB
C436	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C452	VCEA9M1CW106M	J	10	16V	EL.	AB
C505	VCEA0A1HW107M	J	100	50V	EL.	AB
C508	VCFYAA2AA224J	J	0.22	100V	Mylar	AD
C509	VCKYD41CY103N	J	0.01	16V	Ceramic	AA
C511	VCEA0A1VW477M	J	470	35V	EL.	AB
C512	VCKYPA2HB102K	J	1000p	500V	Ceramic	AA
C513	VCEA0A1VW108M	J	1000	35V	EL.	AD

PWB-A: DUNTKB177WEA2(20U-FS1)
PWB-A: DUNTKB177WEA3(CU20FS1)
MAIN UNIT (Continued)

Ref. No.	Part No.	★				Code
C514	VCFYSA1JB273J+	J	0.027	63V	Mylar	AC
C515	VCEACA1HC335J	J	3.3	50V	EL.	AC
C518	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C519	VCKYCY1HB102K	J	1000p	50V	Ceramic	AA
C601	VCQYTA1HM563J	J	0.056	50V	Mylar	AB
C602	VCEA0A1HW475M	J	4.7	50V	EL.	AB
C603	VCEA0A1HW105M	J	1	50V	EL.	AB
C604	VCEAGA2EW336M	J	33	250V	EL.	AD
C605	VCKYPA2HB102K	J	1000p	500V	Ceramic	AA
C606	VCKYPA2HB102K	J	1000p	500V	Ceramic	AA
⚠ C607	VCFPVC3ZA902H	R	9000p	1.8kV	M-Poly.	AD
	or					
	VCFPVC3CA902H					
C608	VCKYPA2HB561K	J	560p	500V	Ceramic	AA
C610	VCFYSB2EB823J	J	0.082	250V	Mylar	AD
C611	VCFPVC2DB244J	J	0.24	200V	M-Poly.	AD
C641	VCEA0A1EW108M	J	1000	25V	EL.	AD
C642	VCEA0A1EW476M	J	47	25V	EL.	AB
C643	VCEA0A1CW477M	J	470	16V	EL.	AC
⚠ C701	RC-FZ037SCEZZ	J	0.22	AC125V	Plastic	AD
	or					
	RC-FZ012SGEZZ					
	or					
	RC-FZ017SCEZZ					
	or					
	RC-FZ029SCEZZ					
C702	RC-KZ0029CEZZ	J	0.01	250V	Ceramic	AC
C703	RC-KZ0029CEZZ	J	0.01	250V	Ceramic	AC
⚠ C705	RC-EZ1022CEZZ	J	470	200V	EL.	AK
C706	VCQYTA1HM103J	J	0.01	50V	Mylar	AA
⚠ C711	VCFYFA1HA334J	J	0.33	50V	Mylar	AB
C713	RC-KZ016SCEZZ	J	470p	250V	Ceramic	AD
C718	VCKYPA2HB472K	J	4700p	500V	Ceramic	AB
C735	VCKYCY1HB681K	J	680p	50V	Ceramic	AA
C737	VCEA0A1EW226M	J	22	25V	EL.	AB
C738	RC-KZ0040CEZZ	J	820p	2kV	Ceramic	AD
	or					
	RC-KZ0340CEZZ					
C739	VCEA0A1HW104M	J	0.1	50V	EL.	AB
C743	VCKYPH3DB561K	J	560p	2kV	Ceramic	AC
C751	RC-KZ0106GEZZ	J	3300p	AC250V	Ceramic	AG
	or					
	RC-KZ0092GEZZ					
	or					
	RC-KZ021SCEZZ					
C752	VCKYPH3DB561K	J	560p	2kV	Ceramic	AC
C753	RC-EZ0724CEZZ	J	100	160V	EL.	AG
C754	RC-EZ0638CEZZ	J	33	160V	EL.	AG
C755	VCQYTA1HM103J	J	0.01	50V	Mylar	AA
C756	VCEA0A1EW108M	J	1000	25V	EL.	AD
C758	VCEA0A1HW225M	J	2.2	50V	EL.	AB
C759	VCKYCY1HB102K	J	1000p	50V	Ceramic	AA
C784	VCKYCY1HB103K	J	0.01	50V	Ceramic	AA
C801	VCFYFA1HA105J	J	1	50V	Mylar	AE
C802	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C803	VCEA0A1AW476M	J	47	10V	EL.	AB
C804	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C805	VCEA0A1HW105M	J	1	50V	EL.	AB
C806	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C807	VCEA0A1CW337M	J	330	16V	EL.	AC
C808	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C809	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C810	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C811	VCKYCY1EF104Z	J	0.1	25V	Ceramic	AA
C812	VCKYCY1EF104Z	J	0.1	25V	Ceramic	AA
C813	VCKYCY1EF104Z	J	0.1	25V	Ceramic	AA
C814	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C815	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C816	VCKYCY1EF104Z	J	0.1	25V	Ceramic	AA
C817	VCEA0A1AW107M	J	100	10V	EL.	AB
C818	VCEA0A1HW475M	J	4.7	50V	EL.	AB
C819	VCCCCY1HH121J	J	120p	50V	Ceramic	AA
C820	VCEA0A1HW474M	J	0.47	50V	EL.	AB
C821	VCKYCY1HF153Z	J	0.015	50V	Ceramic	AB
C822	VCEA0A1HW105M	J	1	50V	EL.	AB
C823	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C824	VCEA0A1CW337M	J	330	16V	EL.	AC
C825	VCEA9M1HW105M	J	1	50V	EL.	AB
C826	VCKYPA1HF103Z	J	0.01	50V	Ceramic	AA
C827	VCEA9M1CW476M	J	47	16V	EL.	AB
C828	VCKYPA1HB103K	J	0.01	50V	Ceramic	AA
C829	VCEA0A1CW476M	J	47	16V	EL.	AB
C831	VCKYCY1EF104Z	J	0.1	25V	Ceramic	AA
C833	VCKYCY1EF104Z	J	0.1	25V	Ceramic	AA
C834	VCEA0A1CW107M	J	100	16V	EL.	AC
C835	VCEA0A1CW106M	J	10	16V	EL.	AB
C836	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C837	VCEA0A1HW105M	J	1	50V	EL.	AB
C839	VCCCCY1HH680J	J	68p	50V	Ceramic	AA
C840	VCKYCY1EF104Z	J	0.1	25V	Ceramic	AA
C841	VCCCCY1HH101J	J	100p	50V	Ceramic	AA
C842	VCEA9M1HW474M	J	0.47	50V	EL.	AB
C843	VCEA9M1HW105M	J	1	50V	EL.	AB
C845	VCKYCY1CF224Z	J	0.22	16V	Ceramic	AA
C846	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C847	VCCCCY1HH220J	J	22p	50V	Ceramic	AA
C848	VCEA0A1HW105M	J	1	50V	EL.	AB
C849	VCFYFA1HA223J	J	0.022	50V	Mylar	AB
C855	VCKYCY1HB561K	J	560p	50V	Ceramic	AA
C856	VCKYCY1HB102K	J	1000p	50V	Ceramic	AA
C861	VCCCCY1HH221J	J	220p	50V	Ceramic	AA
C862	VCKYCY1HB102K	J	1000p	50V	Ceramic	AA
C863	VCCCCY1HH221J	J	220p	50V	Ceramic	AA
C864	VCKYCY1HB102K	J	1000p	50V	Ceramic	AA
C1001	VCEA0A0JW107M	J	100	6.3V	EL.	AB
C1003	VCEA0A1CW106M	J	10	16V	EL.	AB
C1004	VCKYCY1CF474Z	J	0.47	16V	Ceramic	AB
C1006	VCEA0A1HW225M	J	2.2	50V	EL.	AB
C1007	VCEA0A1CW107M	J	100	16V	EL.	AC
C1008	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C1009	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C1011	VCKYCY1HB221K	J	220p	50V	Ceramic	AA
C1012	VCEA0A1HW105M	J	1	50V	EL.	AB
C1013	VCKYCY1HB102K	J	1000p	50V	Ceramic	AA
C1014	VCEA0A1HW475M	J	4.7	50V	EL.	AB
C1015	VCCCCY1HH101J	J	100p	50V	Ceramic	AA
C1081	VCEA0A1HW104M	J	0.1	50V	EL.	AB

RESISTORS

[M-Ox.··· Metal Oxide, M-Film··· Metal Film]

RJ1	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ2	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ3	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ4	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ6	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ7	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ9	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ10	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ11	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ13	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ14	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ15	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ16	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ17	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ19	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ22	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ23	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ27	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ28	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ29	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ33	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ35	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ37	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ39	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ41	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ42	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA

PWB-A: DUNTKB177WEA2(20U-FS1)
PWB-A: DUNTKB177WEA3(CU20FS1)
MAIN UNIT (Continued)

Ref. No.	Part No.	★			Description	Code
RJ43	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ47	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ50	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ51	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ52	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ53	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ60	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ62	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ63	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ65	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ67	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ68	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ69	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ70	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ71	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
RJ72	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
R201	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R202	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R205	VRS-CY1JF680J	J	68	1/16W	M-Ox.	AA
R206	VRS-CY1JF122J	J	1.2k	1/16W	M-Ox.	AA
R207	VRS-CY1JF221J	J	220	1/16W	M-Ox.	AA
R208	VRS-CY1JF331J	J	330	1/16W	M-Ox.	AA
R209	VRS-CY1JF392J	J	3.9k	1/16W	M-Ox.	AA
R216	VRS-VV3LB333J	J	33k	49W	M-Ox.	AB
R220	VRS-CY1JF221J	J	220	1/16W	M-Ox.	AA
R301	VRS-CY1JF102J	J	1k	1/16W	M-Ox.	AA
R302	VRN-VV3DB1R2J	J	1.2	2W	M-Film	AA
R303	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
R304	VRD-RA2BE683J	J	68k	1/8W	Carbon	AA
R305	VRS-CY1JF274J	J	270k	1/16W	M-Ox.	AA
R307	VRS-CY1JF222J	J	2.2k	1/16W	M-Ox.	AA
R308	VRS-CY1JF392J	J	3.9k	1/16W	M-Ox.	AA
R310	VRS-CY1JF473J	J	47k	1/16W	M-Ox.	AA
R311	VRD-RA2BE272J	J	2.7k	1/8W	Carbon	AA
R314	VRS-CY1JF392J	J	3.9k	1/16W	M-Ox.	AA
R315	VRS-CY1JF222J	J	2.2k	1/16W	M-Ox.	AA
R362	VRS-CY1JF332J	J	3.3k	1/16W	M-Ox.	AA
R363	VRS-CY1JF564J	J	560k	1/16W	M-Ox.	AA
R364	VRS-CY1JF332J	J	3.3k	1/16W	M-Ox.	AA
R365	VRS-CY1JF564J	J	560k	1/16W	M-Ox.	AA
R381	VRS-CY1JF564J	J	560k	1/16W	M-Ox.	AA
R382	VRS-CY1JF332J	J	3.3k	1/16W	M-Ox.	AA
R383	VRS-CY1JF564J	J	560k	1/16W	M-Ox.	AA
R384	VRS-CY1JF332J	J	3.3k	1/16W	M-Ox.	AA
R431	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R432	VRS-CY1JF750J	J	75	1/16W	M-Ox.	AA
R433	VRS-CY1JF750J	J	75	1/16W	M-Ox.	AA
R434	VRS-CY1JF750J	J	75	1/16W	M-Ox.	AA
R435	VRS-CY1JF750J	J	75	1/16W	M-Ox.	AA
R437	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R461	VRS-CY1JF750J	J	75	1/16W	M-Ox.	AA
R462	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R502	VRS-VV3AB102J	J	1k	1W	M-Ox.	AA
	or					
	VRS-VV3AB561J	J	560	1W	M-Ox.	AA
R503	VRN-VV3DB1R2J	J	1.2	2W	M-Film	AA
R504	VRS-CY1JF222J	J	2.2k	1/16W	M-Ox.	AA
R506	VRS-VV3AB331J	J	330	1W	M-Ox.	AA
R507	VRN-VV3AB1R0J	J	1	1W	M-Film	AA
R513	VRD-RM2HD333J	J	33k	1/2W	Carbon	AA
R514	VRD-RM2HD682J	J	6.8k	1/2W	Carbon	AA
R520	VRS-CY1JF123J	J	12k	1/16W	M-Ox.	AA
R522	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R523	VRD-RA2BE101J	J	100	1/8W	Carbon	AB
R524	VRD-RA2BE103J	J	10k	1/8W	Carbon	AA
R525	VRD-RA2BE122J	J	1.2k	1/8W	Carbon	AA
R526	VRD-RA2BE101J	J	100	1/8W	Carbon	AB
R528	VRS-CY1JF683J	J	68k	1/16W	M-Ox.	AA
⚠ R601	VRS-SV2HC102J	J	1k	1/2W	M-Ox.	AA
R602	VRD-RA2BE393J	J	39k	1/8W	Carbon	AA
R603	VRD-RA2BE273J	J	27k	1/8W	Carbon	AA
R604	VRD-RA2BE473J	J	47k	1/8W	Carbon	AA
R605	VRD-RM2HD104J	J	100k	1/2W	Carbon	AA
R606	VRN-VV3LBR27J	J	0.27	3W	M-Film	AC
⚠ R611	VRN-VV3ABR27J	J	0.27	1W	M-Film	AA
⚠ R612	VRD-RM2HD270J	J	27	1/2W	Carbon	AA
R613	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
R614	VRD-RA2BE154J	J	150k	1/8W	Carbon	AA
R615	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R616	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R617	VRS-CY1JF123J	J	12k	1/16W	M-Ox.	AA
R618	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
⚠ R621	VRN-SV2HC4R7J	J	4.7	1/2W	M-Film	AA
R622	VRS-VV3DB682J	J	6.8k	2W	M-Ox.	AA
R623	VRN-VV3ABR47J	J	0.47	1W	M-Film	AA
R625	VRN-VV3ABR47J	J	0.47	1W	M-Film	AA
R631	VRS-VV3LB391J	J	390	3W	M-Ox.	AB
R632	VRS-VV3LB122J	J	1.2k	3W	M-Ox.	AB
⚠ R633	VRS-KA3NG3R3K	J	3.3	7W	M-Ox.	AD
R635	VRS-VV3LB183J	J	18k	3W	M-Ox.	AB
R636	VRS-VV3LB183J	J	18k	3W	M-Ox.	AB
R637	VRD-RA2BE331J	J	330	1/8W	Carbon	AA
R638	VRD-RA2BE331J	J	330	1/8W	Carbon	AA
R639	VRS-VV3AB562J	J	5.6k	1W	M-Ox.	AA
R642	VRD-RM2HD470J	J	47	1/2W	Carbon	AA
R661	VRS-CY1JF102J	J	1k	1/16W	M-Ox.	AA
R662	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
R701	VRW-KQ3NC1R5K	J	1.5	7W	Cement	AE
R702	VRD-RM2HD100J	J	10	1/2W	Carbon	AA
R705	VRN-VV3DBR33J	J	0.33	2W	M-Film	AA
R706	VRN-VV3DBR33J	J	0.33	2W	M-Film	AA
R707	VRS-SV2HC270J	J	27	1/2W	M-Ox.	AA
R708	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R710	VRS-SV2HC103J	J	10k	1/2W	M-Ox.	AA
R711	VRD-RA2BE394J	J	390k	1/8W	Carbon	AA
R713	VRS-SV2HC122J	J	1.2k	1/2W	M-Ox.	AA
R715	VRD-RA2BE150J	J	15	1/8W	Carbon	AA
R716	VRD-RA2BE223J	J	22k	1/8W	Carbon	AA
⚠ R717	RR-DZ0049CEZZ	J	3.9M	1/2W	Solid	AB
	or					
	RR-HZ0048CEZZ					
	or					
	VRDUA2HG395K					
R725	VRS-SV2HC821J	J	820	1/2W	M-Ox.	AA
R733	VRD-RA2EE394J	J	390k	1/4W	Carbon	AA
R736	VRD-RM2HD184J	J	180k	1/2W	Carbon	AA
R739	VRD-RM2HD332J	J	3.3k	1/2W	Carbon	AA
R740	VRD-RM2HD470J	J	47	1/2W	Carbon	AA
R741	VRN-RA2BK682F	J	6.8k	1/8W	M-Film	AA
R753	VRD-RM2HD124J	J	120k	1/2W	Carbon	AA
R754	VRN-VV3DB8R2J	J	8.2	2W	M-Film	AB
R755	VRS-VV3DB150J	J	15	2W	M-Ox.	AA
R756	VRS-VV3DB121J	J	120	2W	M-Ox.	AA
R759	VRS-VV3DB101J	J	100	2W	M-Ox.	AA
R766	VRS-CY1JF333J	J	33k	1/16W	M-Ox.	AA
R767	VRD-RA2BE103J	J	10k	1/8W	Carbon	AA
R768	VRS-CY1JF332J	J	3.3k	1/16W	M-Ox.	AA
R801	VRS-CY1JF273J	J	27k	1/16W	M-Ox.	AA
R802	VRS-CY1JF682J	J	6.8k	1/16W	M-Ox.	AA
R803	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
R804	VRS-CY1JF222J	J	2.2k	1/16W	M-Ox.	AA
R805	VRS-CY1JF222J	J	2.2k	1/16W	M-Ox.	AA
R806	VRS-CY1JF222J	J	2.2k	1/16W	M-Ox.	AA
R807	VRS-CY1JF222J	J	2.2k	1/16W	M-Ox.	AA
R810	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R812	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R814	VRS-CY1JF473J	J	47k	1/16W	M-Ox.	AA
R815	VRS-CY1JF473J	J	47k	1/16W	M-Ox.	AA
R816	VRS-CY1JF223J	J	22k	1/16W	M-Ox.	AA
R817	VRS-CY1JF473J	J	47k	1/16W	M-Ox.	AA
R818	VRS-VV3AB151J	J	150	1W	M-Ox.	AA
R823	VRD-RA2BE101J	J	100	1/8W	Carbon	AB
R824	VRD-RA2BE101J	J	100	1/8W	Carbon	AB
R826	VRD-RA2BE101J	J	100	1/8W	Carbon	AB
R827	VRS-CY1JF102J	J	1k	1/16W	M-Ox.	AA
R828	VRS-CY1JF471J	J	470	1/16W	M-Ox.	AA

PWB-A: DUNTKB177WEA2(20U-FS1)
PWB-A: DUNTKB177WEA3(CU20FS1)
MAIN UNIT (Continued)

Ref. No.	Part No.	★	Description			Code
R829	VRS-CY1JF472J	J	4.7k	1/16W	M-Ox.	AA
R830	VRS-CY1JF393J	J	39k	1/16W	M-Ox.	AA
R831	VRS-CY1JF271J	J	270	1/16W	M-Ox.	AA
R832	VRS-CY1JF822J	J	8.2k	1/16W	M-Ox.	AA
R833	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R835	VRS-CY1JF332J	J	3.3k	1/16W	M-Ox.	AA
R836	VRD-RA2BE470J	J	47	1/8W	Carbon	AA
R838	VRS-CY1JF105J	J	1M	1/16W	M-Ox.	AA
R839	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R840	VRS-CY1JF124J	J	120k	1/16W	M-Ox.	AA
R841	VRD-RA2BE821J	J	820	1/8W	Carbon	AA
R842	VRS-CY1JF471J	J	470	1/16W	M-Ox.	AA
R843	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
R849	VRS-CY1JF222J	J	2.2k	1/16W	M-Ox.	AA
R850	VRS-CY1JF472J	J	4.7k	1/16W	M-Ox.	AA
R851	VRS-CY1JF221J	J	220	1/16W	M-Ox.	AA
R852	VRS-CY1JF221J	J	220	1/16W	M-Ox.	AA
R853	VRS-CY1JF221J	J	220	1/16W	M-Ox.	AA
R854	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
R855	VRD-RA2BE102J	J	1k	1/8W	Carbon	AA
R861	VRS-CY1JF121J	J	120	1/16W	M-Ox.	AA
R862	VRS-CY1JF121J	J	120	1/16W	M-Ox.	AA
R1002	VRS-CY1JF183J	J	18k	1/16W	M-Ox.	AA
R1003	VRS-CY1JF822J	J	8.2k	1/16W	M-Ox.	AA
R1006	VRS-CY1JF822J	J	8.2k	1/16W	M-Ox.	AA
R1007	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
R1008	VRS-CY1JF183J	J	18k	1/16W	M-Ox.	AA
R1009	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
R1021	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R1022	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R1023	VRD-RA2BE271J	J	270	1/8W	Carbon	AA
R1024	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R1026	VRS-CY1JF000J	J	00	1/16W	M-Ox.	AA
R1027	VRS-CY1JF104J	J	100k	1/16W	M-Ox.	AA
R1031	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R1032	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
R1034	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
R1035	VRD-RA2BE101J	J	100	1/8W	Carbon	AB
R1036	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
R1037	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
R1038	VRS-CY1JF562J	J	5.6k	1/16W	M-Ox.	AA
R1039	VRS-CY1JF102J	J	1k	1/16W	M-Ox.	AA
R1040	VRD-RA2BE273J	J	27k	1/8W	Carbon	AA
R1041	VRD-RA2BE103J	J	10k	1/8W	Carbon	AA
R1042	VRD-RA2BE101J	J	100	1/8W	Carbon	AB
R1043	VRS-CY1JF104J	J	100k	1/16W	M-Ox.	AA
R1045	VRD-RA2BE101J	J	100	1/8W	Carbon	AB
R1046	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R1047	VRS-CY1JF183J	J	18k	1/16W	M-Ox.	AA
R1048	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R1049	VRS-CY1JF183J	J	18k	1/16W	M-Ox.	AA
R1051	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R1052	VRS-CY1JF104J	J	100k	1/16W	M-Ox.	AA
R1053	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R1054	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R1059	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
R1061	VRS-CY1JF102J	J	1k	1/16W	M-Ox.	AA
R1062	VRS-CY1JF105J	J	1M	1/16W	M-Ox.	AA
R1063	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
R1064	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
R1065	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
R1066	VRS-CY1JF561J	J	560	1/16W	M-Ox.	AA
R1067	VRS-CY1JF152J	J	1.5k	1/16W	M-Ox.	AA
R1068	VRS-CY1JF331J	J	330	1/16W	M-Ox.	AA
R1069	VRS-CY1JF152J	J	1.5k	1/16W	M-Ox.	AA
R1070	VRS-CY1JF331J	J	330	1/16W	M-Ox.	AA
R1071	VRS-CY1JF152J	J	1.5k	1/16W	M-Ox.	AA
R1072	VRS-CY1JF221J	J	220	1/16W	M-Ox.	AA

Ref. No.	Part No.	★	Description	Code
			SWITCHES	
S1001	QSW-K0077GEZZ	J	CH-Up	AB
S1002	QSW-K0077GEZZ	J	CH-Down	AB
S1003	QSW-K0077GEZZ	J	VOL-Up	AB
S1004	QSW-K0077GEZZ	J	VOL-Down	AB
S1005	QSW-K0077GEZZ	J	MENU	AB
S1006	QSW-K0114CEZZ	J	POWER	AE
			MISCELLANEOUS PARTS	
⚠ RY701	RRLYJ0093CEZZ	J	Relay	AG
⚠ F701	QFS-B4023CEZZ	J	Fuse, 4A/125V	AC
FH701	QFSHD1013CEZZ	J	Fuse Holder	AC
FH702	QFSHD1014CEZZ	J	Fuse Holder	AC
FB701	RBLN-0020CEZZ	J	Ferrite Bead	AB
J401	QJAKGA015WJZZ	R	Jack	AH
J402	QJAKE0210CE04	J	Jack	AC
J403	QJAKE0211CE09	R	Jack	AD
J404	QJAKE0211CE02	R	Jack	AD
J405	QJAKG0093CEZZ	J	Jack	AH
J406	QJAKFA008WJZZ	J	Jack	AF
P302	QPLGN0441CEZZ	J	Plug, 4-pin(S)	AB
P407	QPLGN0341CEZZ	J	Plug, 3-pin(WO)	AA
P601	QPLGN0660CEZZ	J	Plug, 6-pin(K)	AC
P603	QPLGN0361CEZZ	J	Plug, 3-pin(TP651-3)	AB
P701	QPLGN0260CEZZ	J	Plug, 2-pin(M)	AC
P705	QTiPM0083CEZZ	J	Tip(SG)	AB
P1002	QPLGN0561CEZZ	J	Plug, 5-pin(BC)	AB
RMC1001	RRMCU0222CEZZ	J	R/C Receiver	AL
TP201	QLUGP0102PEZZ	R	Lug	AA
RDA701	PRDAR0118GJFW	J	Heat Sink, for Q701	AD
RDA602	PRDAR0224PEFW	R	Heat Sink, for Q602	AF
RDA501	PRDARA010WJFW	R	Heat Sink, for IC501	AD
	LHLDW1047PEZZ	R	Holder	AB
	LHLDW1064PEKZ	R	Holder	AC
	LHLDW1104PEZZ	R	Holder	AB
	LHLDW1105PEZZ	R	Holder	AB
	LX-BZ3049GEFD	J	Screw	AA
	LX-BZ3100CEFD	J	Screw	AA
	QCNW-A229WJZZ	J	Connecting Cord (K)	AD
	QCNW-A230WJZZ	J	Connecting Cord (H)	AD
	QCNW-A299WJZZ	R	Connecting Cord (FA0)	AD
	QCNW-A482WJZZ	R	Connecting Cord (DF)	AG
	QCNW-A529WJZZ	R	Connecting Cord (YUV)	AF
	QCNW-A530WJZZ	R	Connecting Cord (AN)	AE
	QCNW-A531WJZZ	R	Connecting Cord (FAV)	AF
	QCNW-A532WJZZ	R	Connecting Cord (RAV)	AF
	QCNW-A533WJZZ	R	Connecting Cord (AV)	AD
	QCNW-A534WJZZ	R	Connecting Cord (MTS)	AE
	QCNW-A625WJZZ	R	Connecting Cord P706	AD
	XTASD30P12000	J	Screw	AA

Ref. No.	Part No.	★	Description	Code

PWB-B: DUNTKB178WEA2(20U-FS1)
PWB-B: DUNTKB178WEA3(CU20FS1)
CRT UNIT

TRANSISTORS

Q881	VS2PA1015Y+-1+	R	2PA1015Y+	AC
Q882	VS2SC3789//1E	J	2SC3789	AE
Q883	VS2SC3789//1E	J	2SC3789	AE
Q884	VS2SC3789//1E	J	2SC3789	AE

DIODES

D882	VHD1SS119//-1	J	Diode	AB
D885	VHD1SS119//-1	J	Diode	AB

COIL

L852	VP-MK820K0000	J	Peaking, 82µH	AB

CAPACITORS

[EL.··· Electrolytic]

C851	VCCCCY1HH221J	J	220p	50V	Ceramic	AA
C852	VCCCCY1HH221J	J	220p	50V	Ceramic	AA
C853	VCCSPA1HL221J	J	220p	50V	Ceramic	AA
C854	RC-KZ0153CEZZ	J	1000p	3kV	Ceramic	AB
C883	VCEA0A1CW336M	J	33	16V	EL.	AB

RESISTORS

[M-Ox.··· Metal Oxide]

R870	VRS-CY1JF470J	J	47	1/16W	M-Ox.	AA
R871	VRD-RA2BE331J	J	330	1/8W	Carbon	AA
R872	VRS-CY1JF121J	J	120	1/16W	M-Ox.	AA
⚠ R873	VRS-VV3DB123J	J	12k	2W	M-Ox.	AA
R874	VRD-RM2HD332J	J	3.3k	1/2W	Carbon	AA
R875	VRS-CY1JF470J	J	47	1/16W	M-Ox.	AA
R876	VRD-RA2BE331J	J	330	1/8W	Carbon	AA
R877	VRS-CY1JF121J	J	120	1/16W	M-Ox.	AA
R878	VRS-CY1JF271J	J	270	1/16W	M-Ox.	AA
R879	VRS-CY1JF121J	J	120	1/16W	M-Ox.	AA
R880	VRS-CY1JF470J	J	47	1/16W	M-Ox.	AA
R881	VRS-CY1JF561J	J	560	1/16W	M-Ox.	AA
R882	VRS-CY1JF391J	J	390	1/16W	M-Ox.	AA
R883	VRD-RA2BE561J	J	560	1/8W	Carbon	AA
R884	VRS-CY1JF152J	J	1.5k	1/16W	M-Ox.	AA
R886	VRS-CY1JF821J	J	820	1/16W	M-Ox.	AA
R887	VRD-RA2BE470J	J	47	1/8W	Carbon	AA
R892	VRD-RM2HD332J	J	3.3k	1/2W	Carbon	AA
⚠ R893	VRS-VV3DB123J	J	12k	2W	M-Ox.	AA
R894	VRD-RM2HD332J	J	3.3k	1/2W	Carbon	AA
⚠ R895	VRS-VV3DB123J	J	12k	2W	M-Ox.	AA

MISCELLANEOUS PARTS

P851	LHLDW1105PEZZ	R	Holder, 5-pin(K)	AB
P852	LHLDW1104PEZZ	R	Holder, 4-pin(H)	AB
SC851	QSOCV0016PEZZ or QSOCV0933CEZZ or QSOCV0931CEZZ	R	CRT Socket	AF

Ref. No.	Part No.	★	Description	Code

PWB-E:DUNTKB271FMA0
MTS MODULE UNIT

INTEGRATED CIRCUITS

IC3001	VHiCXA2074Q-1	J	CXA074Q	AY
IC3002	VHiMM1501XN-1Y	R	MM1501XNRE	AE

TRANSISTORS

Q3001	VS2PD601AR/-1	J	2PD601AR	AB
Q3002	VS2PD601AR/-1	J	2PD601AR	AB
Q3004	VS2PD601AR/-1	J	2PD601AR	AB
Q3005	VS2PD601AR/-1	J	2PD601AR	AB
Q3006	VS2PD601AR/-1	J	2PD601AR	AB
Q3007	VS2PD601AR/-1	J	2PD601AR	AB

CAPACITORS

[EL.··· Electrolytic]

C3001	VCE9GA1HW475M	J	4.7	50V	EL. (N.P)	AB
C3002	VCKYCY1HB562K	J	5600p	50V	Ceramic	AA
C3003	VCQYTA1HM123K	J	0.012	50V	Mylar	AA
C3004	VCEA0A1HW105M	J	1	50V	EL.	AB
C3005	VCEA0A1HW475M	J	4.7	50V	EL.	AB
C3006	VCEA0A1CW106M	J	10	16V	EL.	AB
C3007	VCEA0A1HW475M	J	4.7	50V	EL.	AB
C3008	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C3009	VCEA0A1CW227M	J	220	16V	EL.	AC
C3010	VCE9GA1HW475M	J	4.7	50V	EL. (N.P)	AB
C3011	VCEA0A1HW475M	J	4.7	50V	EL.	AB
C3012	VCE9GA1HW475M	J	4.7	50V	EL. (N.P)	AB
C3013	VCKYCY1HB272K	J	2700p	50V	Ceramic	AA
C3014	VCQYTA1HM473K	J	0.047	50V	Mylar	AB
C3015	VCEACA1HC335K	J	3.3	50V	EL.	AC
C3016	VCE9GA1HW475M	J	4.7	50V	EL. (N.P)	AB
C3017	VCEACA1CC106K	J	10	16V	EL.	AC
C3018	VCEA0A1HW105M	J	1	50V	EL.	AB
C3019	VCEA0A1CW106M	J	10	16V	EL.	AB
C3020	VCEA0A1CW106M	J	10	16V	EL.	AB
C3021	VCEA0A1CW106M	J	10	16V	EL.	AB
C3022	VCEA0A1CW106M	J	10	16V	EL.	AB
C3023	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C3024	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C3025	VCKYCY1HF473Z	J	0.047	50V	Ceramic	AA
C3026	VCKYCY1HF473Z	J	0.047	50V	Ceramic	AA
C3030	VCQYTA1HM682K	J	6800p	50V	Mylar	AB
C3031	VCKYCY1HF682ZY	R	6800p	50V	Ceramic	AB
C3034	VCEA0A1HW224M	J	0.22	50V	EL.	AB
C3037	VCEA0A1HW335M	J	3.3	50V	EL.	AB
C3038	VCEA0A1HW335M	J	3.3	50V	EL.	AB
C3039	VCEA0A1HW224M	J	0.22	50V	EL.	AB
C3042	VCKYCY1HB681K	J	680p	50V	Ceramic	AA
C3043	VCKYCY1HB681K	J	680p	50V	Ceramic	AA
C3044	VCEA0A1EW476M	J	47	25V	EL.	AB
C3045	VCEA0A1HW335M	J	3.3	50V	EL.	AB
C3046	VCEA0A1HW335M	J	3.3	50V	EL.	AB
C3047	VCEA0A1HW335M	J	3.3	50V	EL.	AB
C3048	VCEA0A1HW335M	J	3.3	50V	EL.	AB
C3080	VCEA0A1CW106M	J	10	16V	EL.	AB
C3081	VCEA0A1CW106M	J	10	16V	EL.	AB
C3082	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C3083	VCEA0A1CW106M	J	10	16V	EL.	AB

RESISTORS

[M-Ox.··· Metal Oxide]

R3001	VRS-CY1JF221J	J	220	1/16W	M-Ox.	AA
R3002	VRS-CY1JF221J	J	220	1/16W	M-Ox.	AA
R3003	VRS-CY1JF105J	J	1M	1/16W	M-Ox.	AA
R3004	VRS-CY1JF104J	J	100k	1/16W	M-Ox.	AA
R3005	VRS-CY1JF623J	J	62k	1/16W	M-Ox.	AA
R3007	VRS-CY1JF332J	J	3.3k	1/16W	M-Ox.	AA
R3008	VRS-CY1JF302J	J	3k	1/16W	M-Ox.	AA
R3010	VRS-CY1JF392J	J	3.9k	1/16W	M-Ox.	AA
R3011	VRS-CY1JF102J	J	1k	1/16W	M-Ox.	AA
R3012	VRS-CY1JF102J	J	1k	1/16W	M-Ox.	AA
R3013	VRS-CY1JF102J	J	1k	1/16W	M-Ox.	AA

Ref. No.	Part No.	★	Description	Code

PWB-E:DUNTKB271FMA0

MTS MODULE UNIT

R3014	VRS-CY1JF102J	J	1k	1/16W	M-Ox.	AA
R3016	VRS-CY1JF102J	J	1k	1/16W	M-Ox.	AA
R3018	VRS-CY1JF102J	J	1k	1/16W	M-Ox.	AA
R3019	VRS-CY1JF102J	J	1k	1/16W	M-Ox.	AA
R3021	VRS-CY1JF102J	J	1k	1/16W	M-Ox.	AA
R3024	VRS-CY1JF000J	J	0	1/16W	M-Ox.	AA
R3025	VRS-CY1JF272J	J	2.7k	1/16W	M-Ox.	AA
R3026	VRS-CY1JF331J	J	330	1/16W	M-Ox.	AA
R3027	VRS-CY1JF392J	J	3.9k	1/16W	M-Ox.	AA
R3028	VRS-CY1JF683J	J	68k	1/16W	M-Ox.	AA
R3029	VRS-CY1JF392J	J	3.9k	1/16W	M-Ox.	AA
R3030	VRS-CY1JF683J	J	68k	1/16W	M-Ox.	AA
R3031	VRS-CY1JF182J	J	1.8k	1/16W	M-Ox.	AA
R3032	VRS-CY1JF223J	J	22k	1/16W	M-Ox.	AA
R3033	VRS-CY1JF102J	J	1k	1/16W	M-Ox.	AA
R3034	VRS-CY1JF182J	J	1.8k	1/16W	M-Ox.	AA
R3035	VRS-CY1JF223J	J	22k	1/16W	M-Ox.	AA
R3036	VRS-CY1JF102J	J	1k	1/16W	M-Ox.	AA
R3080	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R3081	VRS-CY1JF101J	J	100	1/16W	M-Ox.	AA
R3082	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
R3083	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
R3084	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA
R3085	VRS-CY1JF103J	J	10k	1/16W	M-Ox.	AA

MISCELLANEOUS PARTS

P3001	QPLGZ0810CEZZ	J	Plug, 8-pin(M)	AD
P3002	QPLGN0441CEZZ	J	Plug, 4-pin(RAV)	AB
P3003	QPLGN0441CEZZ	J	Plug, 4-pin(FAV)	AB
P3004	QPLGN0342CEZZ	J	Plug, 3-pin(WF)	AA
P3008	QPLGZ0810CEZZ	J	Plug, 8-pin(N)	AD
P3009	QPLGZ0610CEZZ	J	Plug, 6-pin(SW)	AB
P3012	QPLGN0241CEZZ	J	Plug, 2-pin(AV)	AA
P3013	QPLGN0241CEZZ	J	Plug, 2-pin(AN)	AA

MISCELLANEOUS PARTS

Ref. No.	Part No.	★	Description	Code
⚠ ACC701	QACCD3090CESA	J	AC Cord	AK
SP301	VSP1206PB50WA	J	Speaker(L)	AP
SP302	VSP1206PB50WA	J	Speaker(R)	AP
	LHLDK0012PEZZ	R	AC Cord Holder	AC
	LHLDW1003PEZZ	R	Wire Holder, x2	AA
	LHLDW1033PEZZ	R	Wire Holder, x2	AA
	LHLDW1047PEZZ	R	Wire Holder, x1	AB
	LHLDW1060PEZZ	R	Wire Holder, x2	AA
	LHLDW1063PEKZ	R	Wire Holder, x1	AD
	LHLDW1075PEKZ	R	Wire Holder, x4	AC
	LHLDZ0040PEZZ	R	Holder, x2	AC
	LHLDZ0063PEZZ	R	Anode Clamp Holder, x1	AD
	LHLDZ0106PEZZ	R	Holder, x2	AC
	LHLDZ0133PEZZ	R	Wire Holder	AC
	LX-TZ0019PEFD	R	Screw, x4	AB
	LX-TZ3004CEFD	J	Screw, x1	AA
	LX-TZA003WJFD	J	CRT Screw, x4	AF
	LX-WZ0001PEFD	R	Washer, x4	AB
	LX-WZ0011PEFD	R	Washer, x4	AB
	LX-WZ3050CEFD	J	Washer, x4	AA
	PSPAG0031PEZZ	R	Rubber Spacer	AD
	PSPAH0070PE00	R	Mask Spacer, x2	AC
	PSPAH0148PE00	R	Spacer, x2	AD
	PSPAH0149PE00	R	Spacer, x1	AE
	PSPAH0156PE00	R	Mask Spacer, x2	AC
	QCNW-A528WJZZ	R	Connecting Cord(SP)	AG
	TCAUHA015WJZZ	R	Caution Label(20U-FS1)	AB
	TCAUS0004PEZZ	R	Warning Label(20U-FS1)	AD
	TCAUS0013PEZZ	R	Caution Label(CU20FS1)	AB
	TLABM1829PEZZ	R	Model Label(20U-FS1)	AB
	TLABM1906PEZZ	R	Model Label(CU20FS1)	AB
	TLABN0001PEZZ	R	Serial No. Label	AD
	TLABRA002WJZZ	R	Bar Code Label(CU20FS1)	AB
	TLABZA034WJZZ	R	POP Label(CU20FS1)	AF
	XTASD30P12000	J	Screw, x3	AA
	XTASD40P16000	J	Screw, x8	AA
	XTASD40P20000	J	Screw, x4	AA

PACKING PARTS
(NOT REPLACEMENT ITEM)

Ref. No.	Part No.	★	Description	Code
	SPAKCA038WJZZ	–	Packing Case(20U-FS1)	—
	SPAKCA088WJZZ	–	Packing Case(CU20FS1)	—
	SPAKP0110PEZZ	–	Wrapping Paper	—
	SPAKP0122PEZZ	–	Wrapping Paper	—
	SPAKXA013WJZZ	–	Buffer Material	—
	SSAKA0001PEZZ	–	Polyethylene Bag	—
	TLABK0002PEZZ	–	Carton Label	—

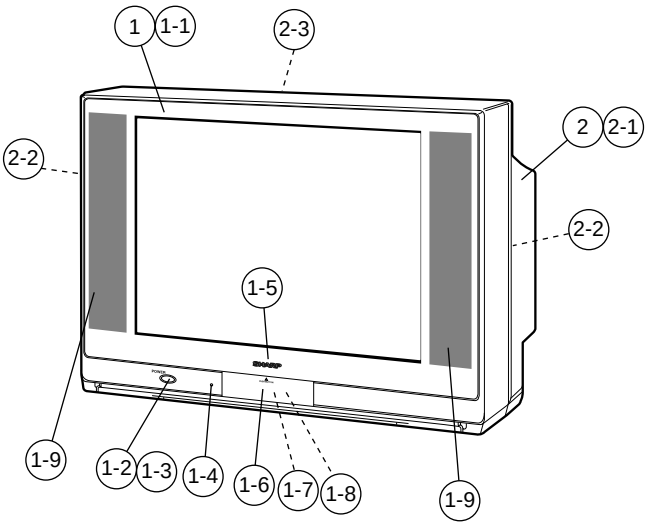
SUPPLIED ACCESSORIES

Ref. No.	Part No.	★	Description	Code
	RRMCGA035WJSB	R	Infrated R/C Unit	AX
	TGAN-0018PEZZ	J	Guarantee Card	AD
	TiNS-A100WJZZ	R	Operation Manual (20U-FS1)	AG
	TiNS-A184WJZZ	R	Operation Manual (CU20FS1)	AL

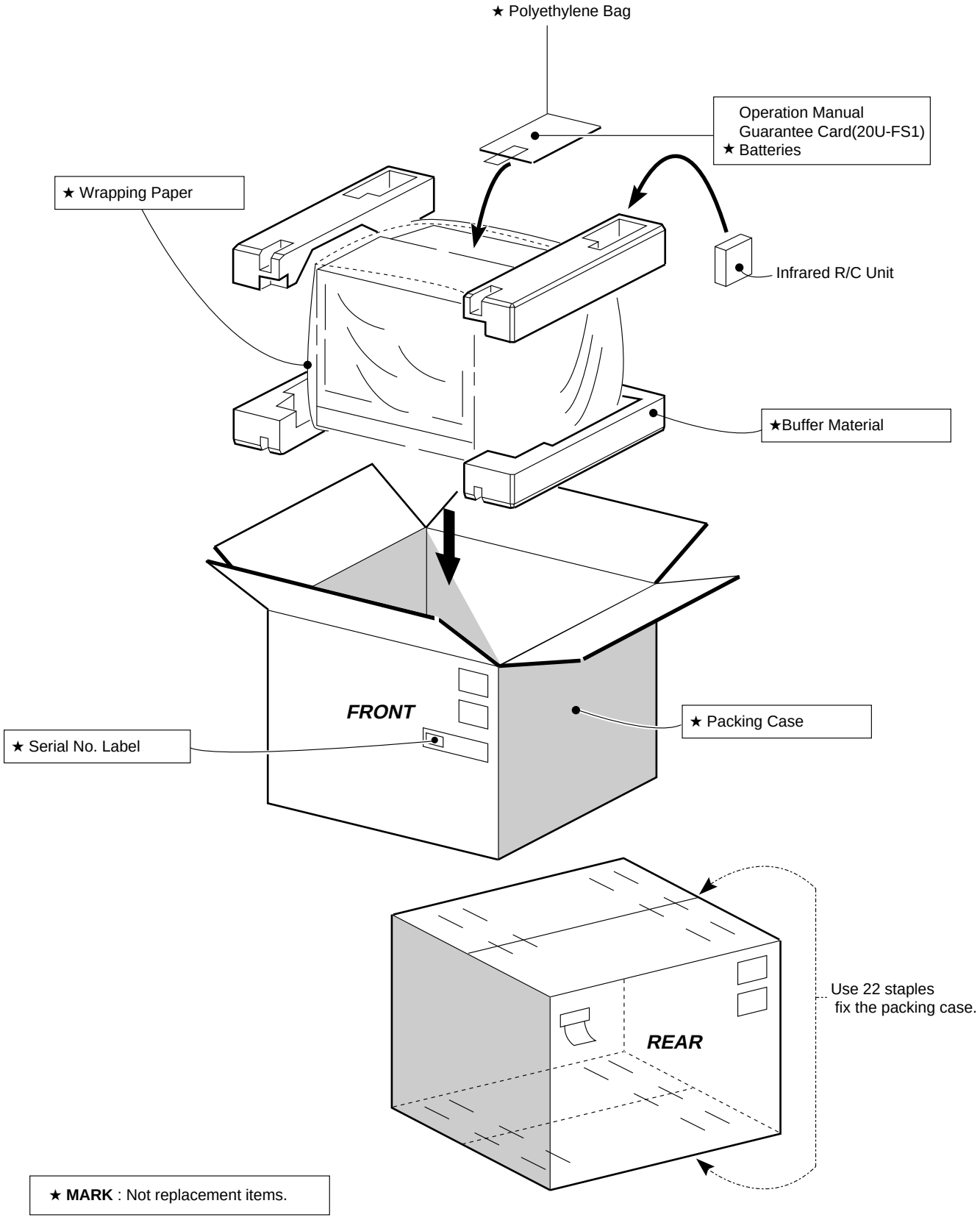
CABINET PARTS

Ref. No.	Part No.	★	Description	Code
1	CCABA2717WEV0	R	Front Cabinet Ass'y(20U-FS1)	BN
1	CCABA2717WEV1	R	Front Cabinet Ass'y(CU20FS1)	BN
1-1	*Not Available*	–	Front Cabinet	—
1-2	JBTN-A011WJSA	R	Button, Power	AF
1-3	MSPRC0005PEFW	R	Spring, for Power Button	AB
1-4	GCOVAA010WJSA	R	R/C, LED Cover	AD
1-5	HBDGB3142CESA	J	Badge, "SHARP"	AG
1-6	GDORF0196PESB	R	Door	AH
1-7	HiNDPA017WJSA	R	Indication Plate	AE
1-8	PKAi-0007PE00	R	Door, Latch	AE
1-9	GBFL-0011PE00	R	Speaker Baffle, x2	AF
2	CCABB2479WEV0	R	Rear Cabinet Ass'y	BC
2-1	*Not Available*	–	Rear Cabinet	—
2-2	*Not Available*	–	Spacer (Side), x2	—
2-3	*Not Available*	–	Spacer (Top)	—

CABINET PARTS LOCATION



PACKING OF THE SET



★ **MARK** : Not replacement items.

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